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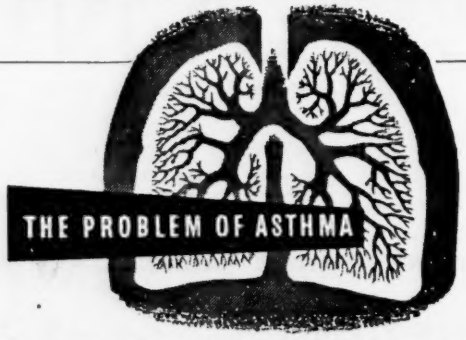

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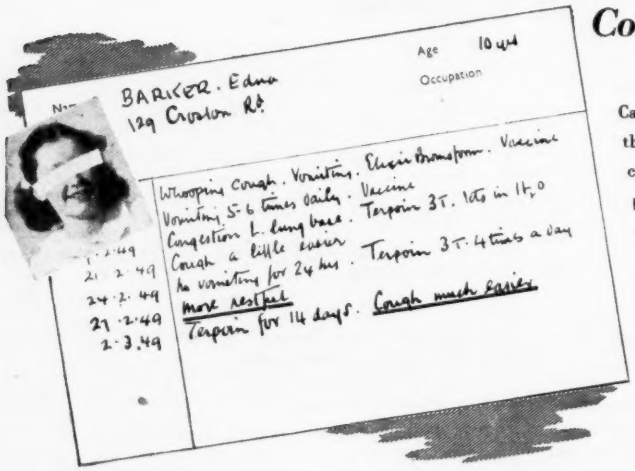

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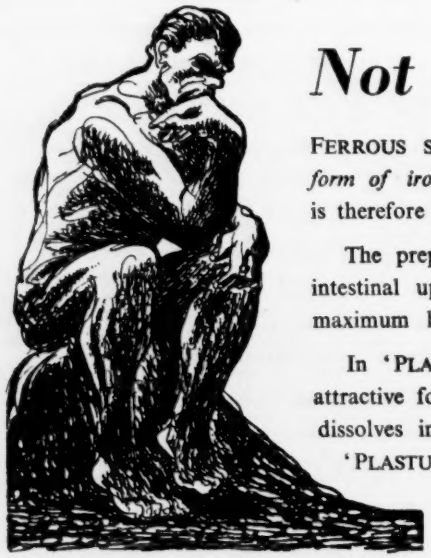

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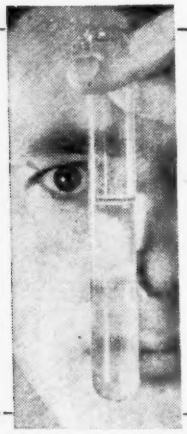

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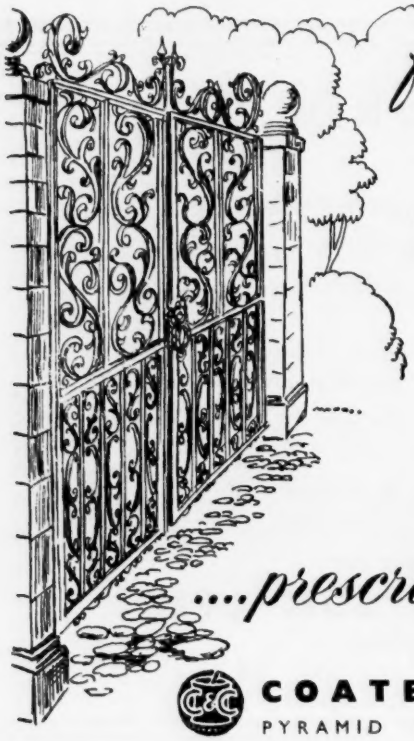

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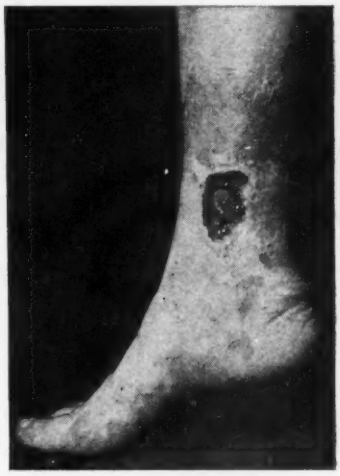

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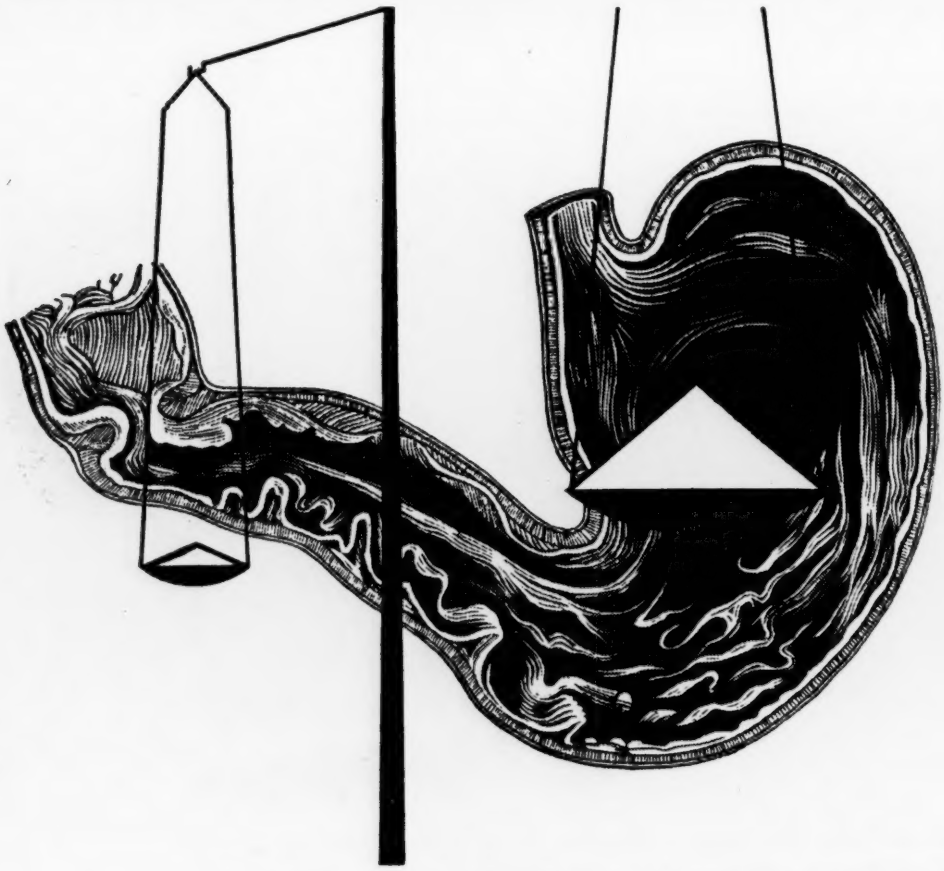

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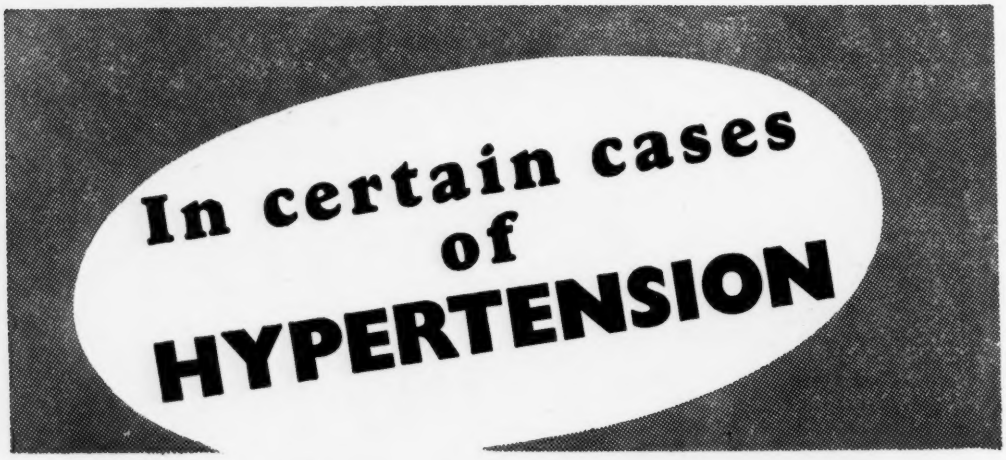

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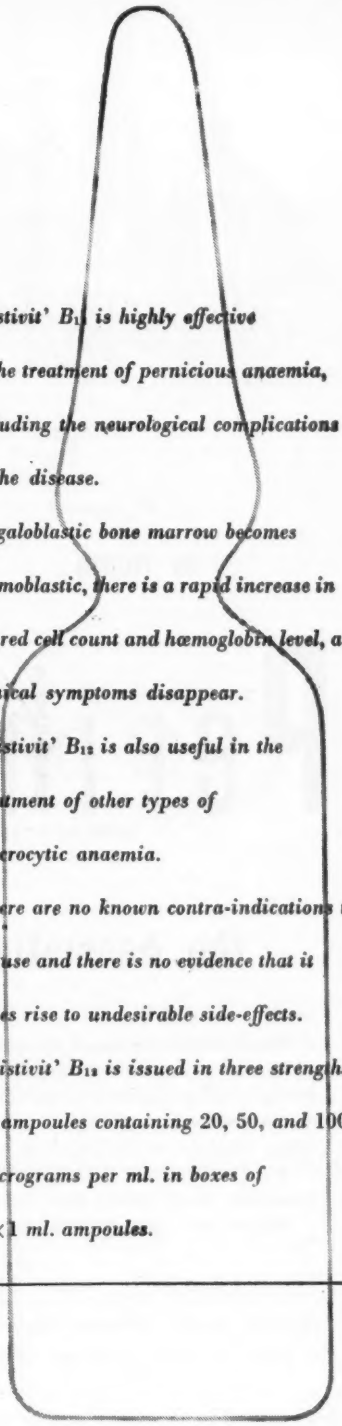

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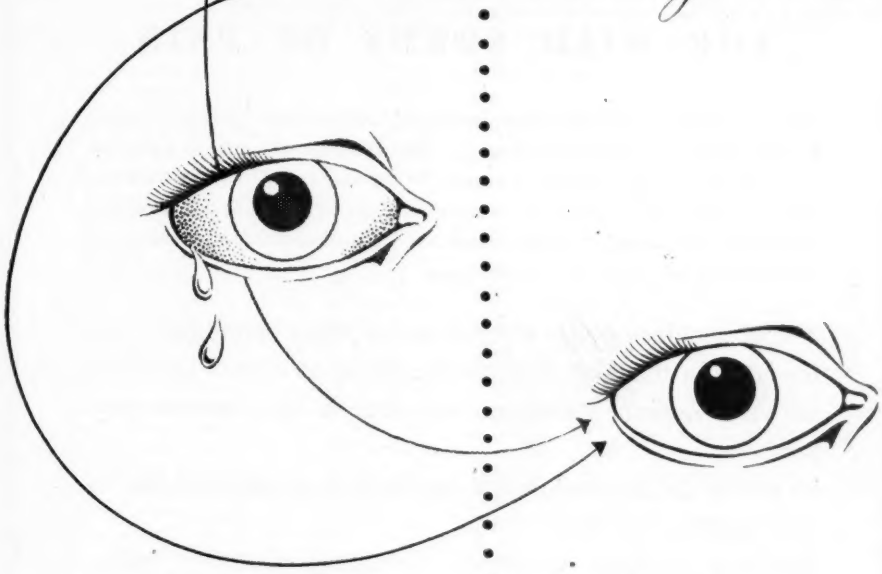

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THE INFLUENCE OF LANGUAGE ON MEDICINE *

J. Z. YOUNG
M.A. Oxfd, F.R.S.

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF LONDON, AT UNIVERSITY COLLEGE

IT may seem strange to introduce a course on the scientific basis of medicine with a discussion of the influence of language. Indeed it might be thought to be treachery for a scientist to discuss these subjects at all; the motto of the Royal Society is *nullius in verba*. Is it possible, as the motto seems to suggest, to escape from the pervasive effect of language on our observations and instruments, our diagnosis and prescription?

In the study of the actions of the nervous system the language currently used certainly presents severe difficulties to the student, research-worker, and practising doctor. It leads to the absurd situation that those who advise us about the disorders of the nervous system are divided into several camps, which have separate languages and are often antagonistic to each other.

Since the nervous system occupies a central part in our life this weakness in our language for dealing with it is reflected throughout medical science. It is largely because we find it so hard to say what we are, whether mind or body, that we have no central approach to medicine. It is often lamented that our students are taught a mass of detail but are given no general framework in which the facts can be set. I propose to try to show how this framework can be provided if we approach the problem directly and simply, as biologists should.

We all have the aim of describing man, and assisting men to live their lives. Specialists may feel anxious to hurry on from such apparently familiar ground to whatever particular subject they regard as more exciting. But let us pause to consider the implications of the fact that medicine is a special aspect of man as a social animal.

Good practitioners of an art often tell us that any study of method is unnecessary and even harmful; and those who teach, or have taught, well, often say that there is no profit in studying how to teach. This is especially true in medicine, where much teaching is practical. That good teachers do not like discussing how to teach is surely a sign that they have appreciated the essence of the use of language—namely, that being conventional it must be used uniformly throughout the group. What the student has to learn is the current methods of practising his art. But by a curious tradition, we take pains to disguise from him this central fact of social activity: we tell him instead that what he is studying are the "facts"—say of anatomy—without pointing out that all we can teach him is the current way of describing the phenomena. When we recognise that the central "fact," or item of knowledge, is that human beings communicate, a surprising clarification sets in.

In the 17th century there was a revolution in practice, springing from the recognition that words are but counters, as Hobbes put it. *Nullius in verba:* the scientist was determined not to care for words for their own sake, but to recognise that they were but an instrument, comparable to the other instruments he used. Perhaps this lesson was never fully learnt, or has been forgotten; so that a new absolutism has come among us, where the "facts" of science are as tyrannical as were the dogmas of religion. Particularly there are signs of this in medicine, where the strict discipline of method, necessary for the protection of the patient, is all too apt to degenerate into dogma. The corrective—which frees the scientist or the physician, and yet leaves him able to use his tools with confidence—is to understand the nature of the tools, to learn the significance and dangers of language. If we neglect this necessary task, we fall into the dangers awaiting those who use tools they do not understand. Surely this is the answer to the common complaint that we are narrow specialists, and the more serious one that we have no general system within which to place the separate pieces of knowledge we acquire about man.

The Man and the Machine

The neurologist has a special reason for studying language. Words used for description condition to a remarkable extent the amount of attention directed to objects in the world around us, and also condition the actions we perform in response to our environment. Further understanding of those operations of the brain that are involved in speaking would give us clues as to how that organ performs its remarkable computations. Some day we may, I hope, be able to understand the pattern of activities in the brain in a way that will show how all the seemingly disconnected actions of a man are knit together into one pattern. The fact that so much of what passes through our brains is symbolised in words may give us a powerful hint as to *what* it is that is passing through them. For this reason it may prove to be easier to study the brains of men than those of other animals. There is perhaps a clue in the fact that languages as different as Icelandic and Hebrew share many sounds that can be related to gestures. Jóhannesson (1949) has developed the thesis of Paget (1930) that speech is "gesturing with the tongue." Further analysis on these lines might help in the search for unit processes of the cerebral speech mechanism, and hence of cortical action in general.

The influence of language appears as soon as we begin to try to define medicine, or the sciences of anatomy and physiology which are its foundations. A biologist examining our society might say that medicine is an activity by which individuals help each other to maintain homeostasis or the balance of life. Since man's special homeostatic machinery is mainly social, medicine may often be called upon to assist in correcting some social incapacity. All too often the doctor, not having been trained to recognise this characteristic of his charges, limits his activities to correcting what we may call the lower homeostatic machinery. Is this a result of the deep-seated linguistic convention that uses the analogy of a machine, and starts by introducing to students a "body" (in anatomy) with "functions" (in physiology)? We are so used to talking like this that many people are unable to see that it is but a verbal device, a first attempt to describe a man by means of a very crude comparison.

It might be held that a doctor is justified in restricting himself to the "machinery" of the body, and has no responsibilities for the social lives of his patients. Clearly he cannot advise on all aspects of man's homeostasis; he is no expert, for instance, on coal-mining or cooking. Why, then, should he deal with social relations? At this point a biologist might notice another aspect of doctors in our civilisation—that they are experts. They are called upon to give precise advice in relatively limited and defined circumstances. The doctor is called in when needed; although he may regulate our lives for long periods we do not ask him to devise a system for the whole conduct of life. In other communities, however, the medicine-man has much wider functions. The question of where the doctor's functions should best end is debatable and difficult. If he is an expert, what is he to be expert at? Is he just to attend to the plumbing of the body, or is he to be the expert of experts, who attends to the whole man? You cannot have it both ways. If you are to be the chief experts you must

* Based on a lecture delivered to the British Postgraduate Medical Federation on Oct. 7, 1952, to introduce a course on the Scientific Basis of Medicine.

study the whole system and be ready to help a man to readjust whatever part of his balance has gone astray. Properly instructed, doctors are likely to be as well able to do this as any other class of the community. Indeed, I see no way of making them satisfactory doctors simply on the "structure and function," or plumbing basis. I would stress again that language which compares the body with a machine fails to pay attention to features of the greatest practical importance in human life—namely, the cerebral and social ones.

The machine analogy has a very strong effect on the procedure both of research and practice in medicine. Since the emphasis is on a structure, when something "goes wrong" in human life we try, using the analogy of the machine, to "mend" the body. Much can be done in this way, but a more powerful approach is possible. The simple machine-view assumes the presence of the organism, ready manufactured, as a going concern. But a living organism is being made all the time. Recent work, especially since the advent of isotopes, has shown more and more the weakness of the conception of the body or the cell as having a fixed framework. What is fixed is the *organisation*, the way of doing things, of taking in materials and making them serve to maintain the organism in balance with its surroundings. Surely any biological study must be centred on examination of how this balance is maintained. In the case of medicine, when the balance is upset we have illness, and the doctor is called in. If he is to be effective he must know as much as possible of the factors that are at work influencing the balance. These include a whole set that at present he is hardly taught to consider at all—namely, those responsible for the daily manufacture of the machine (if we must use that analogy). The hereditary mechanism of the nucleus, controlling all metabolic processes, is presumably working with the doctor and patient all the time in re-establishing homeostatic balance, though as yet we know little of the details. Seldom (if ever) does the doctor diagnose a complaint by saying "I'm afraid there is something wrong with the organisation of your nucleoproteins." If he does refer to a condition as "hereditary" it is only to dismiss it as "incurable." But as we learn to speak effectively of the *organisation* of the life of a person, and all that controls it, this aspect will surely give much greater power to medicine than does our present concept of the body as a ready-made machine.

Animism and Dualism

The human brain functions by making comparisons. Every individual, faced with a particular situation, deals with it by comparison with other situations through which he has passed, which have left their imprint on the memory system of the brain. Each new situation is matched by this memory system, until an adequate response is produced. Obviously there is no brief way of describing the method by which this matching and selection are achieved; indeed we do not know how it is done. When we make a real effort to find out we shall have made a tremendous step forward.

Yet, we can see already that there is something cognate between the aspects of any situation that we select for attention and observation, and the motor response by which we deal with it. The brain reacts to those features of environmental change that have produced effective motor responses in the past. In particular, it selects features that it can call to the attention of others by a name. This is the activity which gives language its central importance in determining both the observations a doctor makes and the actions he takes on behalf of his patient; and that is why it is impossible for science or medicine to proceed with the motto *nullius in verba*. To a large extent words determine observations. We see what we can name and speak about, neglecting the rest.

Anyone who studies the fashions and conventions of a science at any epoch must be struck by this fact. For example, at present many physiologists make observations on nerve impulses and the excitation of one nerve-cell by another. Few try to study the processes by which organisms discriminate visual forms. Most physiologists would probably say that the time is not ripe for this, and that we have no language adequate to deal with such complex processes. But how are we to make the time ripe? Does language develop automatically? The matter has been so little investigated that it is difficult to be sure, but it seems that a science goes on finding out more and more detail within one language system until new comparisons are introduced—usually as a result of the discovery of a new technique or invention in a different field.

All sciences in their early stages made much use of the description of phenomena by comparison with the behaviour of human beings. Among the first memories to be printed upon our brains are the facial expressions of others. We early learn to distinguish and react to their finest shades, and to give names to these. The names for facial expressions are therefore close to the centre of our conventional language system. Surely this simple fact explains the influence of animism in all its various forms. In order to describe what any occurrence is like, the simplest method—usually—is to compare it with the actions of a human person. From this it is but a short step to suppose that the object in question is tenanted by some entity who is like a person and produces the action in question.

In the particular case of human behaviour this leads to the familiar terminology in which we describe each person as if there were within him some other entity, also like a person, and called his "spirit" or "mind." If this is but a special case of a general human method of description, then we may reasonably hope to grow out of this use of animistic language, and begin to describe the individual in words that shall treat him as one entity rather than as two, one within the other.

Some Rewarding Analogies

One way of examining the matter is to study the words used by people in writing about the nervous system during the modern period. Before the 17th century the language of animism held such firm sway that no other was possible. Then gradually other comparisons were introduced, and it is interesting to see how their effect has developed; though even today the old system still holds chief place.

Vesalius's account already seeks to get away from the dualist approach:

> "But how the brain performs its functions in imagination, in reasoning, in thinking and in memory (or in whatever way, following the dogmas of this or that man, you prefer to classify and name the several actions of the chief soul) I can form no opinion whatever. Nor do I think that anything more will be found out by anatomy or by the methods of those theologians who deny to brute animals all powers of reasoning . . ." (Foster 1924).

Notice that the conception of the brain acting and performing functions as a machine was already taken for granted; indeed Vesalius wished to express himself sceptical about this well-established approach.

When he comes to the nerves his account of them is even more mechanistic. They serve the same functions to the brain as the great artery does to the heart, and the vena cava to the liver, inasmuch as they convey to the instruments to which they ought to be sent the spirits prepared by the brain, and hence may be regarded as the "busy attendants and messengers of the brain." The method used for description is here very clear. The vessels and hence the nerves are tubes for transport. But there is a very personal account of what circulates—namely, "messengers." Vesalius like everyone else had to call upon comparison with human activities for most of his description of the actions of the nervous system.

Descartes, writing about the transport along the nerves, dispensed with "person language" and used instead the analogy of hydrodynamics:

"You may have seen in the grottos and fountains which are in our royal gardens that the simple force with which the water moves is sufficient to put into motion various machines and even to set various instruments playing or to make them pronounce words .... External objects, which by their mere presence act upon the organs of sense of the machine may be compared to strangers, who entering into one of the grottos tread on certain tiles—which are so disposed that if they approach a bathing Diana, they cause her to hide in the rose bushes, and if they then try to follow her, they cause a Neptune to come forward to meet them, threatening them with his trident."

But simple comparisons like this do not provide satisfactory means for describing all human behaviour. For the more complicated parts Descartes, like everyone else, had to use person language—the rational soul being compared to the fountaineer of the system, who takes his place in the reservoir, the pineal gland.

Throughout the 17th century a wide variety of new comparisons was made in the attempt to speak more clearly about the nervous system and its activities. Thomas Willis (1684) from his contacts with the physicists of the Royal Society, divided the corporeal soul into

"a part which glides into the blood after the fashion of a lighted flame, while the other half seems diffused through the animal fluid after the manner of light, like the rays emanating from that flame, rays which, taken up by the brain and nerves as by dioptic glasses and manifoldly reflected or refracted form various figures according to the workings of the animal faculties."

This particular analogy has often been ridiculed, but it at least *tries* to cover the more complex activities of the brain—which is more than can be said even of some very modern physiological treatments of the subject. Willis was typically of the 17th century in that he was prepared to attempt a variety of new analogies.

He elsewhere describes "the ducts of the nervous structures like cords lightly strung and so actuated by a certain continuity of the soul that if either extremity be struck the blow is forthwith felt throughout the whole." Again, "the same spirits rush at once from one goal to another as in a race game or a circus, and then rush back again." Or "its particles, that is to say the spirits, are arranged touching each other, drawn up as it were in line, so these in military fashion, perform their functions [and thus] obey the commands of the brain."

Borelli tried another analogy:

"The nerve fibres are . . . filled with a certain spongy material like elder pith . . . and may indeed be saturated to turgescence, as we see sponges are saturated by water in contact with them." Then "the acts of the command of the will . . . by concussing the whole length of the nerve can squeeze out and discharge from their extreme orifices some spiritous droplets into the appropriate muscle."

It is interesting that such analogies do not seem today to be so useless as they may have looked twenty years ago. Of course they ignore the electrical activities of nerve, which could not then be known, but they bring to our attention other aspects, which electrical analogies at present neglect. Every part of a nerve-fibre depends on its cell body, and certainly some entity passes down the fibre to maintain its trophic integrity. Weiss (1944) and others have shown that there is an actual transport of material along the nerve-fibre and that this may become dammed up behind a constriction. I have suggested (1945) that the breaking up of a nerve-fibre during degeneration is comparable to the segmentation of a column of liquid under surface tension (note once again the use of analogy). It may be that the normal cylindrical shape of the fibre is maintained by a turgor pressure within. Of course, the axoplasm is not exactly comparable to pure water, it is not a "true" liquid. Some people are very ready to condemn analogies because they are not complete or exact. We should not expect them to be. A new comparison is useful if it suggests new observation and measurement, and enables us to talk about the subject more effectively.

What travels along the nerve-fibre may well partake also of the nature of a change in molecular orientation; each section influences the next rather in the manner that Willis hinted with his analogy of the soldiers. Professor Causey (1952) has recently shown that the degeneration of a nerve-fibre spreads steadily away from a cut surface towards the periphery. To use person language, the command from headquarters in the cell has been cut off and the troops fall into disorder. Even the transmission of information along nerve-fibres may partake more of the "transport of spiritous droplets" than a purely electrical view of it suggests. It has been shown that excitatory material is passed along certain axons of insects and crustaceans and in the supra-optic-hypophyseal tract to the posterior lobe of the pituitary gland. Of course there is also considerable evidence of secretion at nerve-endings, histologically as well as physiologically detectable. Surely we see here the advantage of the use of several analogies as methods of comparison. The phenomena in nerve that resemble those commonly called electrical are so conspicuous that they have perhaps hypnotised us and caused us to neglect other aspects.

Certainly the analogies used in speaking about the nervous system are still numerous and varied. Even the chemical and electrical information that we acquire is based upon analogy. What we need is more general language by which to put all these descriptions into their place as part of a system for talking about the whole human being. I believe that it can be done, and indeed that unless we do it soon our age may well come to be recognised as one which is concerned only with lesser problems. Perhaps this is an uncomfortable and stimulating thought.

The analogies of Descartes, Willis, and Borelli did not immediately lead to any great developments in method for management of diseases of the nervous system. Throughout the 18th century the methods of description, diagnosis, and treatment made use of a combination of the old "person language" with new and more "objective" methods of description. Thus Robert Whytt in his treatise on *The Nature, Causes and Cure of Nervous Disorders* (1768) gives descriptions of symptoms which are mainly visceral. They begin with wind in the stomach and intestines, sudden flushings, palpitations, giddiness, and so on. He is able to describe only those things that have simple physical analogues ("wind," "flushings of heat"). Then he tries to refer these to equally simple changes in nerves whose "coats may be obstructed or inflamed, compressed by hard swellings or irritated by acrid humours." In order to describe the actions of nerves, however, he uses a different idiom:

"We know certainly that the nerves are endued with feeling, and that there is a general sympathy which prevails through the whole system, so there is a particular and very remarkable consent between various parts of the body."

Here he is comparing parts of the body with actions of the human whole—they "feel," have "sympathy," and "consent." When the nervous canals become obstructed "the sentient power of the nerves may be either weakened or quite destroyed." Here he uses the two analogies combined. Again if the feeling of the nerve is too acute then there will be "no firm or long-continued state of health, but almost constant succession of greater or less complaints." On the other hand, when nerves are deprived of a proper degree of sensibility, actions will be imperfect: "when sensibility of the retina is impaired objects are seen less distinctly."

He thus divides the influences acting on the nervous system into special causes and general dispositions,

which latter accentuate the tendency to the alterations produced by the special causes. These general dispositions include all the conditions which he observes to influence the occurrence of nervous diseases, including weather, time of year, and heredity.

When it comes to treatment he follows the plan laid down by his description. Since the chief predisposition is in too great or little sensitivity of the viscera, "the best remedies are such as not only strengthen the stomach and bowels, but the whole body or alternatively lessen for a time the too great sensibility of the whole system." The list of remedies that will alter the general disposition includes bitters and bark, steel for strengthening, cold baths, air, diet, wine, exercise, friction, and amusement. For weakening the nerves there is opium. The particular causes to be dealt with include wind, phlegm, worms in the stomach or bowels, improper aliments, obstructions of the viscera, and "sudden and violent afflictions of the mind." These last were to be dealt with (*a*) by avoiding them, (*b*) by strengthening the nerves as above, (*c*) by exciting other sensations or passions of a superior force (e.g., firing a gun by the bed of a girl as she recovered from epileptic fits—or whipping for the same).

The influence of the system used for describing the diseases upon the treatment is clear, though not in all cases completely dominant. For example, opium the only real specific in the list, is an ancient remedy discovered by who knows what accident, aided or not by language. But the emphasis on the symptoms that can be described by simple comparisons and the introduction of a whole system of treatment by "strengthening" and "weakening" shows the limitations imposed by the language used.

New Names and New Notions

Study of the nervous system with the microscope at first made little progress, because there was no model for comparison. By contrast, looking at sperms seventeenth-century spermatists were able to see homunculi because of their interpretation of Aristotle's view that the male contributes form to the embryo. But there was no clear expectation as to what would be seen in a piece of brain. Malpighi reported that he saw little glands, but could make no progress. Indeed it was not until well on in the 19th century that a large development of new ways of speaking about the nervous system took place. This was the result partly of the finding of a terminology by which the microscopical structure could be described. Schwann took a big step in 1839 by showing how the cell theory could be applied to nerve-trunks, though he was wrong in supposing that the cells that carry his name were the units of which a peripheral nerve-fibre is made up. It was only with the development of the neuron theory that a really powerful language for description of the nervous system appeared. Accident played its part, as in the discovery of the Golgi technique for staining nerve-cells; but it could perhaps be shown that language was very important even in the interpretation of these "accidents." The steady application of the method of looking for cells was the clue that led in the end to the neuron theory and to all its modern growths, including the interpretation of the action potential as a surface phenomenon.

Towards the end of the 19th century it began to be possible at last to apply Descartes's analogy of the reflex arc in earnest. Sherrington and others were so successful in this that physiologists have been dazzled by the power of the language ever since. Armed with words like axon, dendrite, synapse, and nerve impulse we can indeed do a great deal better than Descartes with his water pipes and fountaineer. Use of electrical analogies has given us more and more powerful ways of speaking about transmission along nerves and from cell to cell by synaptic excitation.

The Need for New Comparisons

With our current terms we can now say a great deal about the functions of nerve-fibres and nerve-cells. But no-one can feel that we can say all that we wish about the activities of the brain. We teach every medical student to speak about the nervous system in this language of impulses and reflexes, and the result is that it leaves him puzzled. Essentially the language carries us very little further than that of the 17th century. Although it enables us to speak so fully about the activities of the spinal cord and brain-stem it fails for those of the cerebrum. The result in practice is that we have to continue to use person language to speak of the higher activities. Most of us are so used to doing this that we hardly imagine that there is any other method. We speak of a mind interacting in some mysterious way with a body—with all the difficulties that this method entails. It leaves the neurologist not quite sure how far up the brain-stem his domain extends. After many chapters on the spinal cord and cranial nerves his textbook gives one or two chapters on psychoneurosis and disorders of speech. All the rest of human nervous activity (much the most important part) is handed over to another set of specialists with another language—or rather with the several other languages of the various schools of psychology.

Is it necessary for this state of affairs to continue indefinitely? Of course, no-one reasonable would deny that there are considerable differences between what may be called "reflex" and "mental" phenomena, and a case can be made for treating them separately. But what we have been progressively learning is that they also have much in common and that the boundary between them is not sharp. The trouble is that the words that are adequate for describing the lowest or reflex activities seem at first sight to break down completely in dealing with the highest ones.

In order to talk about the brain we need to use comparison with something very much more complicated than any simple machine. Until recently no useful method has presented itself and we have had to regard brain function as something unique. The new features of the situation that have emerged in recent years are (1) the better understanding of the nature and limitations of all language, and (2) the invention of machines that perform some of the actions hitherto characteristic only of the brain. As has happened so often before in history, man makes a tool to assist his living activities and then learns to describe his own actions by comparison with his tools. The language used by those who make machines to assist with communication and computation has provided further means for talking about the brain.

Anyone who has to work on the brain will agree that the lack of adequate comparisons is a serious barrier to research and therefore also to treatment of nervous diseases. This is certainly true so far as the histology and histopathology of the brain is concerned. The methods of preparation available, such as those of Golgi and Cajal, provide us with magnificent pictures of the cells and their processes, but we do not know how to set about describing what we see. We do not know what differences to look for between the brains of idiots and normal men, still less can we succeed in finding, by histological or other methods, signs of the print of memory which determines so much of behaviour. Yet without means of describing this memory system it is only tantalising to suggest that a unified language is possible.

This is surely just the situation in which we should encourage people to try to make new comparisons in order to suggest hypotheses that can be tested. Only in this way can we concentrate attention on the problem and find a satisfactory language. This indeed is what is happening; much attention is devoted to the

comparison of brains and machines and the construction of analogues such as those of Grey Walter (1951) and Ashby (1952). It may be some time before the fruits of such endeavours become apparent, and we must be prepared for many absurd analogies and false starts. The methods of information theory used by engineers are already beginning to provide terms by which we can speak about systems in which there is a complex input, memory, and output. But, as we should expect, the language cannot be taken over unchanged and applied to the brain. Communication engineers deal mostly with systems in which much information is carried in a single channel by very precise physical changes. The brain on the other hand uses a vast number of imprecise low-information channels, which all together carry a great deal of information. In order to be able to speak about this we need to look for other comparisons, for combination with those of communication engineering. For example, a population of organisms also carries its information in many distinct channels. We may be able to combine the methods of information theory with those of the mathematicians who have studied natural selection. The acid test of any comparison is whether it suggests the making of measurements which lead to verifiable forecasting—in fact to control of phenomena.

The case for trying to develop new analogies is that the old ones have proved inadequate. No-one could suggest, I think, that the person language has been as successful as we could wish in describing behaviour or in the handling of nervous diseases. Until the late 19th century insanity was not only incurable but a disgrace to the individual and his family. Was there no connection between the language used and the fact that the insane were kept in the filthiest conditions, usually in chains? As Dana (1925) put it in the introduction to his textbook, "German psychiatry was naught but windy speculation in the top-heavy jargon of German philosophy." Kant (1798) felt that he was qualified to describe insanity and claimed it as the province of the philosophical not the medical faculty. Of course the person language has developed considerably in recent years; modern psychiatry represents the extreme development of this verbal technique. Ways have been found of talking about the more elaborate aspects of human behaviour in terms of entities such as id and super-ego; these provide more complete descriptions than anything that the neurologist can offer at present. Yet one cannot but feel that the whole system lacks power because its method is description of human behaviour by comparison of man with his own image. Our tools are also such images, but they are made of non-living material. When we speak in terms of them we gain generality and power of forecasting.

All our talk of neurons, action potentials, and synaptic transmitters has not produced a satisfactory set of methods for dealing with nervous disease. But it has provided a set of words with which we can at least speak somewhat better than a hundred years ago. The pace of change of language suggests that we shall do very much better still a hundred years hence. But what we still need is a greater unification of our approaches. I should be the last to suggest that we should try to operate with one analogy only. The essence of the scientific approach is the realisation that for each purpose we should use a different analogy—that language and instrumentation are equally tools, useful only within their limits. *Nullius in verba*, yet one of our chief aims is to find ways of speaking by which much information can be compactly conveyed. This, surely, is the nature of the grand generalisations, such as those of physical theory that apply to a wide range of phenomena. It is these which we lack in biology and medicine. What I am suggesting is that we shall find them by first recognising that all our methods are but attempts to describe man and his behaviour. Sometimes we speak about some part by comparison with fire, saying it is inflamed; later we compare a part with a machine, as having structure and functions. Then again, when we can think of no better comparison, we say that in his head there sits an entity which shows some actions analogous to those we name in each other's faces and call love, anger, and so on. All of these are but attempts to describe to each other what we see, and particularly to speak about our forecasts of what will be, and of the actions we propose to take to meet the future.

Surely this shows the secret of how to set about teaching and speaking of the whole man. We are all dissatisfied with the attempts to say that he *is* a machine or he *is* a mind. If we want to tell our students what he is, we should be quite simple about it and start with the "fact" that he is a social animal and a great talker. The question then becomes how we can best talk about man. Our central theme should be to study the balance by which human life is maintained and all the factors that influence it. Such study can be thorough, profound, and exact, and includes all the separate subjects under which we now group our knowledge of medicine. All of these investigate the way in which human life is maintained. If they are to reach to the root of the matter they must go beyond the influences that bear upon the organism every day. Whatever balance we now enjoy is the result of the powers of forecasting learnt during millions of years of evolutionary history, allied to the forecasts each of us has learnt during our lives. The memories of all these past years are retained in the organisation of the nuclei of our cells and in our brains. Knowledge about the nature of these memory stores will provide a proper scientific basis for medicine.

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KERNICTERUS AND PREMATURITY

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KERNICTERUS was first described by Orth in 1875, but until comparatively recently the ætiology remained obscure. With the discovery of the rhesus factor by Landsteiner and Wiener (1941) a reassessment became necessary.

Hitherto kernicterus had been attributed to sepsis (Beneke 1907, Knoepfelmacher 1910, Pfältzer 1914, Thorling 1922), hepatitis (Hoffmann and Hausmann 1926), or an undetermined toxin (Schmörl 1903), as well as to erythroblastosis. As a result of serological investigations following the discovery of the rhesus factor, de Bruyne and van Creveld (1948) demonstrated a relation between kernicterus and rhesus immunisation. Similarly Claireaux (1950) declared that "nuclear jaundice is always associated with icterus gravis neonatorum resulting from hæmolytic disease"; and this is the view commonly held today.

Within the past few years, however, some doubt has been cast on the validity of such statements. Vaughan (1946) said that he had observed kernicterus in two premature babies in circumstances where there was no possibility of rhesus immunisation. Parsons (1947) cited two similar cases, and Aidin, Corner, and Tovey (1950) reported twenty-five cases of kernicterus in premature babies without any pathological or serological evidence of hæmolytic disease.

We report here a further ten cases of kernicterus in which there was no possibility of rhesus incompatibility between mother and fœtus. We also consider the pathogenesis.

Clinical Picture

In the histories and the symptoms and signs of the ten infants there were many similarities. All were premature, the average birth weight being 3 lb. and the average duration of pregnancy 32 weeks. In each case there was some complication either during pregnancy or at the time of birth. In four cases there had been antepartum hæmorrhage due to placenta prævia. Severe pre-eclampsia affected the mothers of another two infants. The cord prolapsed in one case during labour and had to be replaced. Another infant was the second of twins presenting as a breech, and version had to be undertaken before delivery could be effected. A spontaneous but rather precipitate breech delivery occurred in another case. In the tenth case the labour was prolonged for 86 hours.

The infants were feeble at birth, cyanosed, and difficult to resuscitate. All were admitted to the sick nursery and treated by the usual methods for premature babies. Heat and oxygen were supplied, and each received 'Synkavit' and penicillin. The babies were œdematous, and fluids were therefore restricted initially. After 76 hours three of the babies were able to suck, but by the 4th day they were all considerably weaker and had to be tube-fed. Jaundice appeared on this day, and three babies who had been very weak since birth died. On the 5th day a further three had cyanotic attacks and died. Pyrexia developed in two others at this time, and despite treatment with penicillin and aureomycin they died on the 6th day. One infant died on the 7th day, and the last on the 9th day. It was noteworthy that in all the cases for several hours before death, sometimes 24, there was a bloodstained mucous discharge from the nose.

These ten cases have been chosen from a larger series because they exhibited the typical changes and the time range as we have found them. In addition there was no question of blood incompatibility. All were Coombs-negative, and the blood-groups of mother and child, as regards both ABO and rhesus factor, were similar.

Findings Post Mortem

Necropsies were made within 12 hours of death. The babies had lost weight, probably owing to loss of œdema fluid, and they appeared rather dehydrated. Jaundice was severe, particularly in those infants who had lived longest. No gross abnormality was found in the heart, but the right ventricle tended to be dilated. A patchy hæmorrhagic bronchopneumonia was common to all the cases. There was much bile-staining of the liver; in nine cases this was green, but in the infant who lived for 9 days it was bright yellow. No sign of biliary obstruction was found. The spleen was normal. Many uric-acid infarcts were seen in the kidneys, but apart from this these organs appeared to be normal. No gross abnormality was found in the intestinal tract. The adrenals were rather small, and lipoid was confined to the deeper cortex. The brain in every case was rather "wet," but this was most evident in the infants that died earlier. There was an apparent increase of cerebrospinal fluid. Virchow's encephalitis was present around the posterior and inferior horns of the lateral ventricles in every case, but especially in the babies dying on the 4th day. In these babies there was much injection of the vessels in these areas, and the appearances suggested that petechial hæmorrhages were also present. The striking feature in all the cases, however, was the presence of circumscribed jaundiced areas typical of kernicterus. This staining affected the grey matter of the caudate nucleus, corpus striatum, hippocampus, subthalamic nuclei, nuclei in the floor of the fourth ventricle, inferior olives, and dentate nuclei. The umbilicus showed no gross evidence of infection.

HISTOLOGY OF BRAIN

In the present communication the description will be confined to the changes in the brains. It will suffice to say that no evidence of erythroblastosis was found in the spleen or liver.

The histological changes in the brain varied somewhat from case to case, but there was a rough chronological order, with vascular phenomena predominating in the earlier deaths and degeneration of the neurones in the later deaths. In the babies dying on the 4th and 5th days there was conspicuous congestion of the vessels, and many small perivascular hæmorrhages were present in the white matter. These changes were greatest near the lateral ventricles, especially those parts showing Virchow's encephalitis. In addition some of the smaller vessels were thrombosed. Damage to the nerve-cells varied and was not confined to the jaundiced areas. Intracellular œdema was widespread (fig. 1), but more positive signs of degeneration were found in the jaundiced areas. The earliest sign of injury appeared to be a flocculation of the Nissl substance to form larger masses. Further development of the degenerative process took different forms in individual cells. In some, cytoplasmic vacuolation occurred, and this increased in degree while the nucleus, which had moved to an eccentric position, underwent karyolysis. Ultimately only a vacuolated "ghost" cell remained (fig. 2). In other cells there was a loss of Nissl substance until the cytoplasm had a homogeneous hyaline appearance (fig. 3). The nuclei of these cells often showed karyolysis, but some were pyknotic. In the final stage of this change a round and faintly eosinophilic mass was formed.

Only a few tiny perivascular hæmorrhages were seen in the brain of the baby dying on the 7th day. Thrombosis was not found. Œdema was still present, and the perivascular spaces were distended. Many of these spaces contained one or two large cells of macrophage type filled with brownish pigment. Histological evidence of

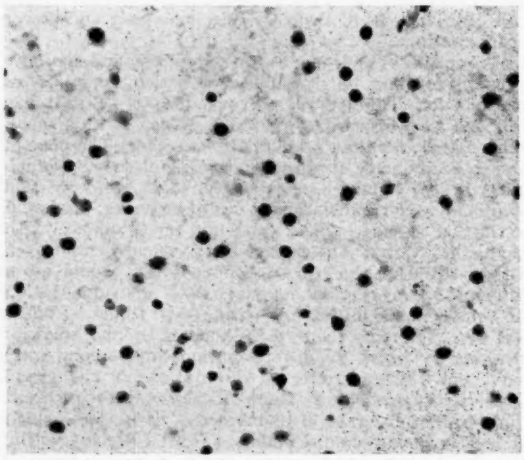

Fig. 1—Section of brain showing œdema of cells. (Hæmatoxylin and eosin. ×850.)

degeneration was now well developed, and necrosis was advanced. Vacuolated and non-vacuolated "ghosts" were common, although a few vacuolated viable cells could still be seen in the affected areas.

Similar changes were found in the brain of the infant dying on the 9th day. In addition, however, there were areas in the grey matter from which all nerve-cells had disappeared. This gave a patchwork appearance to the brain tissue. Perivascular œdema was still present, and pigmented macrophages were common. In the white matter near the lateral ventricles reaction appeared to be taking place with small round cells streaming in columns into the surrounding brain tissue.

For comparison the brains from three fatal cases of kernicterus associated with erythroblastosis due to rhesus factor were examined. Apart from the fact that congestion was less, hæmorrhage not so common, and paraventricular reaction absent, the changes were identical with those described above. Loss of Nissl substance, vacuolation, and necrosis were all found in the affected areas, and the anatomical distribution of the lesions was similar.

OBSERVATIONS ON PREMATURE INFANTS

It is thus apparent that kernicterus can occur quite apart from erythroblastosis, and the lesions in the two

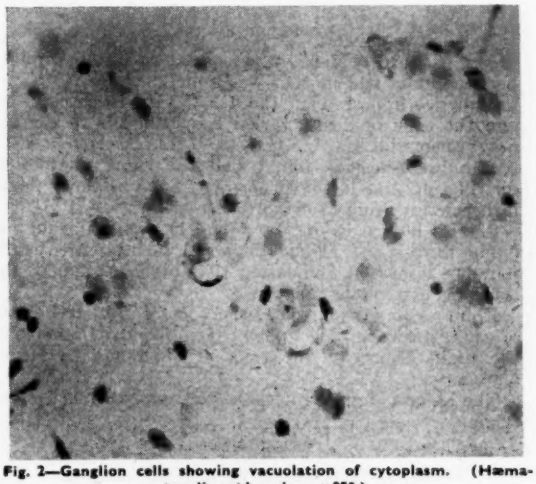

Fig. 2—Ganglion cells showing vacuolation of cytoplasm. (Hæmatoxylin and eosin. ×850.)

conditions are indistinguishable from one another. At first sight there appears to be a ready explanation of the lesions in erythroblastotic infants. It is obviously possible that the nerve-cells are directly attacked by the maternal antibody, but there are many objections to this theory. The damage to nerve-cells is almost certainly done after or just before birth, since there is little histological change in the brains of infants dying shortly after that time (Cappell 1947). Similarly there is no report of kernicterus in stillbirths due to the most severe form of erythroblastosis—i.e., hydrops fœtalis.

Kernicterus is never found apart from jaundice—a fact which naturally raises the question of the relation of hepatic function to the development of this lesion. If such a relation does exist it is obscure, for there is no apparent connection between the degree of liver damage in erythroblastosis and the development of kernicterus. It is, however, a point which must be considered, and it seemed to us that some indication of the answer to this question might be obtained, particularly in the non-erythroblastotic case, if we could examine the brains of premature infants dying before the onset of jaundice. At the same time it was necessary to choose material from

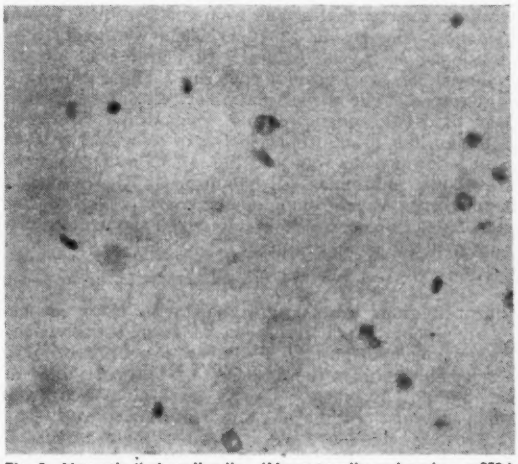

Fig. 3—Necrotic "ghost" cells. (Hæmatoxylin and eosin. ×850.)

infants who had lived long enough to allow histological changes to develop. Eventually we studied the brains from three premature infants who had died 48–72 hours after birth. All three had a history of difficulty at birth similar to that obtaining in the series described above. Asphyxia with cyanosis was present in each one. After admission to the sick nursery they remained feeble. Treatment was applied as in the ten other babies. There was no response, however, and these babies were never able to suck and had to be tube-fed. By 48 hours they were perceptibly weaker, and all died within 72 hours without showing any sign of jaundice.

The brains from these babies showed congestion of the superficial vessels, and there appeared to be an excess of cerebrospinal fluid. Patchy congestion was present in both the white and the grey matter. A severe degree of Virchow's encephalitis was present in each, and many small petechiæ were seen, particularly around the ventricular system but also in other parts of the brain. In addition there were tiny discrete opaque areas whose appearance suggested necrosis. These areas were found in the basal nuclei and in the nuclei of the brain stem, and also in the white matter, where their appearance was more distinct. Microscopically the impressions gained at necropsy were confirmed. There was much congestion and œdema of the brain, with numerous perivascular

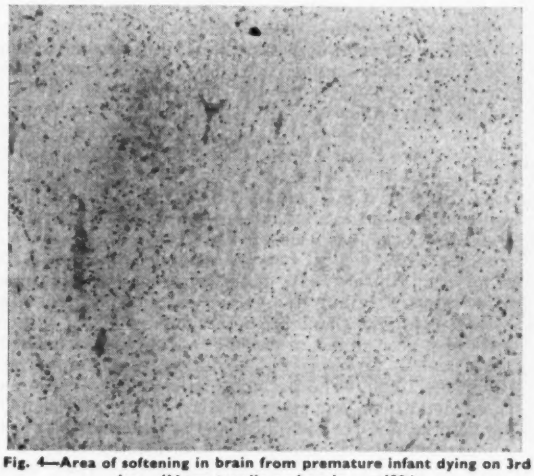

Fig. 4—Area of softening in brain from premature infant dying on 3rd day. (Hæmatoxylin and eosin. ×190.)

hæmorrhages. Thrombosis of small vessels was common around the ventricles but was not confined to these regions. Changes in the nerve-cells were not so well developed as in the babies with kernicterus but they followed the same general pattern. Cellular œdema was widespread. The earlier phases of cell damage, such as loss of Nissl substance and vacuolation, were very common, but in addition necrosis of cells similar to that seen in kernicterus was seen (fig. 4). These changes had the same anatomical distribution as those found in kernicterus. Apart from damage to nerve-cells, occasional small areas of necrosis were found in the white matter, mostly in the corona radiata.

Discussion

Our findings are in agreement with those of Aidin et al. (1950): kernicterus can occur in the absence of rhesus incompatibility. In our series, in view of the serological findings, there seems to be no possibility of a blood-group dyscrasia. Occult erythroblastosis can be ruled out on the same basis and also because of certain differences which are evident when these infants are compared with others dying of kernicterus due to erythroblastosis. Children with kernicterus due to erythroblastosis are usually mature (Zimmerman and Yannet 1933, Claireaux 1950). Jaundice is an early feature in erythroblastosis, whereas in our series it was delayed till the 4th day. Death usually takes place within the first 48 hours in erythroblastosis, whereas in the premature babies with kernicterus the earliest death recorded was on the 4th day and in one case death was delayed until the 9th day.

Despite these clinical differences, however, the microscopical changes were almost identical in both groups. There is less vascular disturbance in the erythroblastotic type, but the features reported by various workers (Zimmerman and Yannet 1933, Dereymaeker 1949, Putnam and Alexander 1937, Wolff 1937) were the same as those found in our series of premature infants. This immediately brings us to consider the pathogenesis of kernicterus in these two groups and whether there is any possible connection between them.

Our study of the brains from non-jaundiced premature infants indicates that similar lesions can occur in the absence of liver dysfunction, and that the pigment is merely deposited in areas already damaged. As indicated above, the same appears to be true of the erythroblastotic infant (Cappell 1947). It is interesting also to note that, although there have been many instances of death in adults following a rhesus-incompatible transfusion, there has never been any report of kernicterus in these circumstances.

Since it seems that hepatic damage can be ruled out as a cause of the brain lesions, it is necessary to consider the factors common to both groups of premature infants. The only significant feature common to all of these infants was difficulty in resuscitation at the time of birth. This would inevitably lead to anoxia. Many workers have claimed that brain lesions are produced by anoxia at birth (Schreiber 1938, Stewart 1942, Darke 1944, Stevenson and Stuart 1950), but no direct proof can be obtained from a study of pathological material. Of more direct significance probably are the studies made of changes in the central nervous system in known states of anoxia. Rotter (1929) described brain lesions in cases of respiratory failure due to poisoning by morphine, by carbon monoxide, and by potassium cyanide. Lesions have also been found in diabetic coma (Riggs and Dyer 1935) and in asphyxia due to nitrous oxide anæsthesia (Courville 1936). The pathological changes described in these conditions are very similar to those found in kernicterus, and the distribution of the lesions is identical. An experimental approach to fœtal asphyxia has been made by Windle (1944), Windle and Becker (1942, 1943), and Windle et al. (1944), who produced temporary asphyxia of animal fœtuses in utero by interfering with the placental circulation, and demonstrated both functional and structural changes in the central nervous system after birth. The focal distribution of asphyxial lesions has been studied by Spielmeyer (1925, 1929), who states that the vulnerability of certain areas of the brain is related to the vascular supply, and according to Ushimura (1927) these vulnerable areas have fewer blood-vessels than do other regions.

From a consideration of the changes described and the findings in comparable conditions reported by other workers there appear to be reasonable grounds for assuming that the main factor in the production of the lesions in our cases of kernicterus in premature infants is anoxia. There is no direct evidence which will allow us to make the same assumption regarding kernicterus of erythroblastotic origin. Nevertheless, in view of the similarity of histological changes and anatomical distribution of lesions, and the absence of any correlation between the occurrence of brain lesions and the titre of antibody or degree of erythroblastosis, it seems probable that anoxia is an important factor. Cappell (1948) states that he is more impressed by the difficulty in establishing respiration than by either the hæmoglobin level or the antibody titre in cases subsequently found to have kernicterus.

Summary

Ten cases of kernicterus in premature infants are described. No evidence of blood-group incompatibility between child and mother was found.

Jaundice appeared on the 4th day in these children, and the time of death varied from the 4th to the 9th day of neonatal life.

The brain lesions found had the same anatomical distribution and histological appearance as those found in kernicterus due to erythroblastosis.

Similar lesions have been found in premature infants dying during the first 3 days of neonatal life before jaundice appeared, indicating that pigmentation of the lesions is a secondary feature.

From a comparison with lesions found in known states of asphyxia we are led to the conclusion that damage to the brain occurs at the time of birth and is due to anoxia.

The lesions of erythroblastosis are probably of similar origin.

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LIGATION OF THE SPLENIC AND HEPATIC ARTERIES IN PORTAL HYPERTENSION

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THE incidence of cirrhosis of the liver among the Chinese in Hong-Kong cannot be correctly estimated but seems to be high; for of 3532 consecutive cases admitted to Queen Mary Hospital 174 were of cirrhosis of the liver.

The pathogenesis of the cirrhosis has been investigated for the past four years by McFadzean, Wong, and Hou (1953), of the departments of medicine and of pathology in the University of Hong-Kong, whose findings are summarised here: cirrhosis in association with infestation by *Schistosoma japonicum* is encountered, as is also postnecrotic scarring. A history of jaundice may be obtained, suggesting a virus hepatitis. Occasionally there is a history of alcoholism. In most cases, however, the pathogenesis is obscure. The cases reported here all belong to this last category. In these the liver is usually small and is the seat of a diffuse hepatic fibrosis. The spleen is enlarged, commonly grossly so, and there is invariably some hypersplenism.

Himsworth (1950) emphasised the part played by protein deficiency in the pathogenesis of "tropical" cirrhosis. Such deficiency is regarded as producing severe prolonged fatty infiltration of the liver which is followed by diffuse hepatic fibrosis. Though the Chinese diet in this area is such as to lend credence to the view that the cirrhosis may be due to protein deficiency, the mechanism of production is not that described by Himsworth. Extensive investigations in all age-groups, both by aspiration liver biopsy and by determination of total fat contents of livers obtained at necropsy, have failed to show a significant incidence of fatty infiltration either in cirrhosis of this group or in the hospital population in general. This is in sharp contrast to cirrhosis of the liver in Chinese with a history of alcoholism, in which gross fatty infiltration is encountered. For convenience the cirrhosis of obscure pathogenesis will be called cryptogenic cirrhosis.

A major problem in the management of established cirrhosis of the liver is to prevent death from the direct or indirect effects of hæmorrhage from œsophageal varices, and this is the primary purpose of any operation designed to reduce portal hypertension. Secondary considerations are that a favourable effect should be exerted by the operation on the ascites and that it should correct the hypersplenism. Ideally the operation should have a beneficial effect on the disease in the liver, either halting or retarding its progress.

There is no doubt that portacaval shunts prevent recurrence of hæmorrhage in most cases and exert a favourable effect on the ascites. Unless the operation is combined with splenectomy, hypersplenism is, at best, only partially corrected (Blakemore 1951). Blakemore said that evidence was accumulating to suggest that portacaval shunts slow the advance of the disease in the liver, but his evidence was equivocal. There is experimental evidence which indicates that this is unlikely. Mann et al. (1931) have shown that the liver does not regenerate after partial hepatectomy in dogs which have an Eck's fistula or in which an anastomosis has been made between the portal vein and the inferior vena cava. Perhaps the greatest defect of portacaval shunts is that they are technically difficult to make and even in the most expert hands are associated with a significant mortality.

In an effort to provide a technically simpler operation with a low mortality the following procedures have been investigated: (1) ligation of the splenic artery alone; (2) ligation of the hepatic and splenic arteries; and (3) ligation of the hepatic artery combined with splenectomy. These operations have been assessed as regards their effectiveness in preventing recurrence of hæmorrhage from œsophageal varices and their effect on the varices, on ascites, and on hypersplenism. In the case of operations involving ligation of the hepatic artery, liver-function tests and aspiration liver biopsies have been carried out at intervals to determine the influence exerted by the operation on the disease in the liver. Because of the absence of an adequate preoperative base-line, and because of the short duration of the postoperative follow-up, our observations on the effects on the liver and liver function are incomplete and are therefore not reported here.

Ligation of Splenic Artery

According to Watson (1935) the splenic artery was first tied by Long in 1905, for a "floating" spleen which had become firmly fixed by adhesions. The operation was repeated by Lantz (1914) for a floating spleen which had become adherent to the bladder; after the operation bimanual examination failed to reveal the presence of an abnormal mass. Blain (1918) tied the artery of a grossly enlarged adherent spleen in a Greek labourer diagnosed as having Banti's syndrome; the patient was reported later as alive and well thirty-four years after the operation. Since then the splenic artery has been tied in most of the conditions for which splenectomy is indicated.

McNee (1931) suggested ligation of the splenic artery in the management of portal hypertension. The rationale of this procedure is based on the fact that the splenic artery furnishes 25–40% of the blood in the portal system, a contribution which is probably increased when the spleen is abnormally large. On theoretical grounds splenectomy should reduce portal pressure by denying to the portal circulation the blood previously distributed to the spleen. Ligation of the splenic artery should be superior to splenectomy because the veins and rich anastomoses therewith are preserved and assist in carrying the blood round the block in the portal system. Everson and Cole (1948) and Blain and Blain (1950) revived the operation as a substitute for splenectomy or lienorenal shunts in poor-risk cases.

MATERIAL AND METHODS

All 5 patients were Chinese adult males with diffuse hepatic fibrosis of cryptogenic origin, the diagnosis being established by biopsy. All of them had a history of at least one attack of severe hæmatemesis from œsophageal varices, which were demonstrated radiographically. The main clinical details are as follows:

Case 1.—A Chinese male labourer, aged 31, had two severe hæmatemeses in the 10 months before operation. Ascites had been present for 3 months and had been prevented from becoming tense by restriction of salt intake to 1 g. daily and by diuretics. There was moderate wasting. The liver was not felt, but the spleen was palpable 5 cm. below the costal margin. Abdominal collateral veins were present.

Case 2.—A Chinese male labourer, aged 35, had two severe hæmatemeses in the 10 months before operation. Ascites had been present for 4 months, and in the last 2 months paracentesis was required twice in addition to salt restriction to 1 g. daily and diuretics. Wasting was moderate. The liver was not felt, but the spleen was palpable 5 cm. below the costal margin. Large collateral veins were present in the lumbar region.

Case 3.—A Chinese male shop-assistant, aged 25, had a massive hæmatemesis 6 weeks before operation. There was no history of ascites. The general condition was good. The liver was not felt, but the spleen was palpable 7 cm. below the costal margin.

Case 4.—A Chinese male tailor, aged 32, had a severe hæmatemesis and three attacks of melæna in the 5 months before operation. On admission to hospital 1 month before

TABLE I—HÆMATOLOGICAL FINDINGS BEFORE AND AFTER LIGATION OF SPLENIC ARTERY

Case no.	Time	Red cells (million per c.mm.)	Hæmoglobin (g. per 100 ml.)	White cells					Platelets (thousand per c.mm.)	Sternal marrow
				Total (thousand per c.mm.)	Differential count (%)					
					Polymorphs	Eosinophils	Lymphocytes	Monocytes		
1	Before operation	2·7	7·1	2·7	75	..	24	1	115	Marrow hypercellular, hyperplasia of erythroid and myeloid elements, normoblastic erythropoiesis, increased megakaryocytes
	1 Month after operation	3·5	8·6	6·8	60	14	26	..	77	
	2 Months ,, ,,	3·7	9·5	3·2	50	1	47	2	91	
	6 ,, ,, ,,	3·3	9·6	2·1	55	1	43	1	95	
	9 ,, ,, ,,	3·2	9·1	2·5	42	2	53	3	119	
2	Before operation	3·1	8·0	2·8	68	..	30	2	124	
	1 Month after operation	3·6	9·8	7·2	60	9	31	..	151	
	2 Months ,, ,,	3·5	9·6	4·0	Not done				115	
3	Before operation	3·6	9·4	2·7	42	2	54	2	193	
	1 Month after operation	4·7	11·4	2·1	40	5	52	3	125	
	3 Months ,, ,,	4·4	12·2	3·2	39	2	55	4	110	
	4 ,, ,, ,,	4·7	12·8	2·2	Not done				75	
4	Before operation	4·4	11·5	3·1	52	5	43	5	92	
	1 Month after operation	4·2	12·1	7·5	60	19	20	1	117	
	2 Months ,, ,,	4·5	12·5	2·7	45	3	51	1	96	
5	Before operation	3·5	9·8	1·9	72	2	26	..	70	
	1 Month after operation	3·7	10·0	2·2	64	5	31	..	85	

operation free fluid was detected in the abdomen, but this rapidly disappeared with salt restriction alone. The general condition was good. The liver was not felt, but the spleen was palpable 4 cm. below the costal margin. Large lumbar and abdominal collateral veins were present.

Case 5.—A Chinese male house-servant, aged 35, had an attack of severe melæna and a moderately large hæmatemesis in the 2 months before operation. Variable ascites had been present for 6 months but after the hæmatemesis it had become tense. Restriction of salt intake to 1 g. daily and diuretics produced a reduction in the quantity of free fluid. There was considerable wasting. The liver was not felt, but the spleen was palpable 8 cm. below the costal margin.

The artery was approached through the lesser sac via an incision in the gastrocolic omentum, isolated at the upper border of the pancreas, tied, and divided.

RESULTS

After operation there was a rapid reduction in size of the spleen by 3–6 cm., but in all the cases the spleen remained palpable.

Case 5 did not attend for examination after discharge 6 weeks after the operation and could not be traced. Cases 2 and 3 had massive repeated hæmatemeses 9 and 18 weeks respectively after operation and died of them. Case 4 had a moderate hæmatemesis 10 weeks after operation and a further attack 1 week later; he recovered but refused further treatment and returned to his village in China. Case 1 remained well for 12 months, when he had melæna for 3 days, followed by a severe hæmatemesis. This patient accepted further treatment and is the same person as case 12 (see below).

During the follow-up no change was seen in the radiological appearance of the œsophageal varices. When present the visible collateral veins persisted unchanged.

Cases 1, 2, and 5 had ascites before operation. In cases 1 and 5 this could be controlled by restriction of salt intake to 1 g. daily and by diuretics, but in case 2 paracentesis had been required in addition to these measures in the 2 months before operation. In case 1, after operation, free fluid persisted in the abdomen, but increase could be prevented by restriction of daily salt intake to 2 g. After 2 months free fluid could no longer be shown in the abdomen, and return to a full salt intake did not provoke recurrence. The patient remained free from ascites until the recurrence of hæmorrhage 12 months after operation. In cases 2 and 5 there was reaccumulation of fluid after operation, and restriction of daily salt intake to 1 g. and diuretics continued to be required.

The effect of ligation of the splenic artery on the hæmatological findings is set out in table I, from which it will be seen that, before operation, all the cases showed thrombocytopenia and leucopenia, and 4 of them (cases 1, 2, 3, and 5) a significant degree of anæmia. After the operation there was no significant change in the platelet-count; the leucocytes were increased in cases 1, 2, and 4, but this increase was transient and within 2 months the white-cell count returned to the preoperative level; cases 1, 2, and 3 showed an increase in the red-cell count but in case 5 it was unaffected. In cases 1 and 2, within 1 month, the red-cell counts rose from 2,700,000 and 3,100,000 per c.mm. to about 3,500,000 per c.mm. respectively, and then rose no further. In the same period in case 3 the red-cell count rose from 3,600,000 to 4,700,000 per c.mm. and was maintained there for a further 3 months.

DISCUSSION

Watson (1935) tied the splenic artery in a patient with severe ascites and repeated hæmatemeses. In a follow-up of more than 3 years there was no recurrence of the hæmatemesis. Berg and Rosenthal (1942) did the operation on 3 patients with cirrhosis and a history of hæmatemesis; 2 of the patients died within a year, 1 of them after a splenectomy done 10 months after the ligation; and the 3rd patient died 3 years later from a massive hæmatemesis. Everson and Cole (1948) reported 3 cases in which ligature of the splenic artery was combined with omentopexy; 1 patient only had a history of hæmatemesis 4 years before, and this patient died of a massive hæmatemesis 3 months after operation. Of the 5 patients reported by Blain and Blain (1950) 3 had cirrhosis and only 1 a history of hæmatemesis; this last patient was well 10 months after the operation. According to Rosemond (1951) Sweet followed up, for 11 years and 2 years, 2 cases of cirrhosis in which the splenic artery had been tied, and there had been no bleeding in these periods. It is not stated whether there had been preoperative hæmorrhage.

So far as the prevention of hæmorrhage is concerned our experience has not been happy. Of our 5 patients the 4 who could be followed up had recurrence of the bleeding, which proved fatal in 2. The recurrence took place 9, 10, and 18 weeks and 12 months after the operation. In none of the cases were œsophageal varices or visible collateral veins altered by the operation. This is in keeping with the finding of Julian and Dye (1951), who found no immediate drop in portal venous pressure after the ligation of the splenic artery in 8 patients with portal hypertension. Sweet, according to Rosemond (1951), considered ligation of the splenic artery as possibly a complete preventive of further hæmorrhages from œsophageal varices. The operation has had no such effect in the present series.

In the case reported by Watson (1935) ascites persisted after operation but paracentesis was required less

frequently. All 3 patients reported by Everson and Cole (1948) had tense ascites. The ascites reaccumulated in the patient who died from hæmatemesis 3 months after the operation. One of the 2 remaining patients continued to require frequent paracentesis after operation, but the other, after a transient reaccumulation of fluid, remained free from ascites and a year later was fully employed. All 3 patients with cirrhosis in the series reported by Blain and Blain (1950) had ascites. In 1 of these the ascites reaccumulated within 7 weeks of the operation and the patient died a month later. The remaining 2 patients were free from ascites 10 months and 2 years later.

Before operation 3 of our patients had ascites, which in 2 was controlled by restriction of salt intake to 1 g. a day and diuretics, but in the 3rd, in addition to these measures, paracentesis was required. One of the former, case 1, showed improvement following operation. Free fluid was present in his abdomen for 2 months, but accumulation was controlled by restriction of the daily salt intake to 2 g. After 2 months a return to a normal salt intake did not provoke recurrence of the ascites. The patient remained free from ascites for 10 months, when it reappeared following recurrence of the hæmorrhage. The operation in the remaining 2 cases exerted little effect. Case 2 required no further paracentesis, but rigid salt restriction and diuretics were required to control the ascites. Case 5, when last seen 6 weeks after operation, also required this régime. In view of the notoriously fluctuating course of ascites it is difficult to attribute any improvement to the operation. Certainly, if the operation has an effect, this is by no means uniform.

Everson and Cole (1948) and Blain and Blain (1950) claimed that ligation of the splenic artery produced a result similar to that of splenectomy. Their claim, so far as the effect in cirrhosis of the liver with portal hypertension is concerned, seems to be based on the postoperative diminution of the spleen, because these workers do not give postoperative hæmatological findings.

In our series the operation had no effect on the thrombocytopenia which was present in all the cases. In only cases 1, 2, and 4 was an effect observed on the leucopenia, and this was transient. Two months after the operation the white-cell counts had fallen to the preoperative levels. The effect on the red-cell count is rather more difficult to assess because, except in case 4, the red-cell count had not become steady after the hæmorrhage before operation. Significant anæmia persisted in cases 1, 2, and 5, and the rise in the red-cell count in cases 1 and 2 after the operation may be attributed to regeneration following the hæmorrhage. In case 3 a significant rise in the red-cell count was encountered; but, in view of the persistent leucopenia and thrombocytopenia, again the rise may probably be attributed to regeneration following hæmorrhage rather than to a selective effect of the operation on a pancytopenic hypersplenism. The contention of Everson and Cole (1948) and Blain and Blain (1950) that ligation of the splenic artery acts as a "functional splenectomy" seems to be untenable, since the operation leaves the hæmatological findings virtually unaltered. Further proof that the spleen continues to function after ligation of the splenic artery is afforded by case 1, in which splenectomy and ligation of the hepatic artery later corrected the pancytopenia (see case 12 below).

Learmonth (1951) on anatomical grounds raised objection to ligation of the splenic artery because a collateral circulation is provided through the right gastro-epiploic artery. He tied and divided the splenic and right gastro-epiploic arteries. This he reported as producing an initial improvement in the blood picture, but later there was return of the pancytopenia. It therefore seems that any elaboration of the operation of ligating the splenic artery is doomed to failure.

It may be concluded from the present series that ligation of the splenic artery alone failed to prevent recurrence of bleeding from œsophageal varices; it exerted at most a doubtful effect on the ascites but no significant effect on the hypersplenism. We can find nothing in the literature accessible to us which negates these conclusions. Learmonth (1951) thought that, with very rare exceptions, the operation need not be retained. Milnes Walker (1952) referred to the operation as useless, a viewpoint with which we agree.

Ligation of Hepatic Artery with Simultaneous Ligation of Splenic Artery or Splenectomy

During the greater part of our observations we were unaware of the work of Berman et al. (1951a) on ligation of the hepatic artery in dogs and the report of Rienhoff (1951) of its use in man. For the sake of clarity we shall present the evidence which first led us to attempt the operation.

Wakim and Mann (1942), using a transillumination technique, made exhaustive microscopical studies of the circulation in the livers of living animals and demonstrated the existence of interconnections between the branches of the hepatic artery and those of the portal vein. These interconnections were present both in the interlobular spaces and between the sinusoids. The former consisted of side-to-side anastomoses between arteries and veins and arteries terminating end-to-side in veins. The sinusoidal connections consisted either of a terminal branch of the hepatic artery and a terminal branch of the portal vein entering into the same sinusoid or of cross-communications between the arterial and portal sinusoids.

The histological observations of Cameron and Mayes (1930) on the effects of ligation of the hepatic artery on the liver had indicated the existence of these communications between portal vein and hepatic artery at arteriolar level. According to Moschcowitz (1948), Sabourin in 1885 demonstrated shunts between branches of the hepatic artery and of the portal vein in cirrhosis of the liver, an observation which has been confirmed by Epplen (1922) and Popper et al. (1950).

Herrick (1907) first noted the effects of these shunts in arterial perfusion experiments on excised normal and cirrhotic livers. He found that in normal livers there was a rise in portal pressure of 1 mm. Hg for every 40 mm. Hg rise in arterial pressure, whereas in the cirrhotic liver it was 1 mm. Hg for every 6 mm. Hg rise in arterial pressure. Dock (1942), using kerosene as the perfusing fluid, showed that, if the portal vein and the hepatic artery were perfused simultaneously at a pressure of 20 and 100 mm. Hg respectively, in the normal liver the rate of flow through the portal vein was 30% less than if the portal vein was perfused alone. In a case of alcoholic cirrhosis he found that the rate of flow was reduced by 78%. One of us (A. J. S. M.), using Dock's technique, repeated his observations on excised cirrhotic livers of cryptogenic origin in Hong-Kong and found the average reduction in flow in 3 cases to be 56%.

That these shunts, which can be demonstrated anatomically and by perfusion experiments, are operative in vivo can be readily shown at laparotomy in cases of cirrhosis of the liver with portal hypertension. If the portal vein be temporarily occluded by pressure, the portal pressure falls only slightly in the segment of vein between the liver and the point of occlusion. This observation has also been reported by Blakemore (1952). If the hepatic artery is then occluded, the portal pressure falls precipitously in this segment. Temporary occlusion of the hepatic artery alone leads to a prompt and significant fall in portal venous pressure.

From these considerations it seems that the pressure within the hepatic artery is a main contributing force to the production of portal hypertension in cirrhosis of the liver.

Ligation of the hepatic artery is usually fatal in guineapig, rabbit, cat, dog, and man. According to Loeffler (1936) the liver of rats and rabbits can survive on portal blood alone. Haberer (1905) emphasised the importance of the position of the ligature and concluded that ligation beyond the origin of the right gastric artery invariably caused massive necrosis. Huggins and Post (1937) showed in dogs that, though ligature of the hepatic artery immediately proximal to its bifurcation caused rapid death, multiple-stage ligations beginning proximally and proceeding distally were safe.

Death is due to a massive necrosis of the liver the cause of which is uncertain. Ellis and Dragstedt (1930) attributed the necrosis in the dog to extensive infection by a spore-forming anaerobic bacillus, which Wolbach and Saiki (1909) had demonstrated in the livers of normal dogs. Andrews and Hrdina (1931) and Boyce and McFetridge (1937), however, reported that autoclaved dog liver would produce death when introduced into the peritoneal cavity. They attributed the death of the animals to absorption of autolytic products, inferring that death following ligation of the hepatic artery was also due to absorption of products of autolysis in the necrosed liver.

Markowitz et al. (1949) showed that dogs survive ligation of the hepatic artery distal to the origin of the right gastric artery if given massive doses of penicillin postoperatively. Davis et al. (1949) and Grant et al. (1950) confirmed these findings, and the latter showed that parenteral aureomycin was equally effective. Chau et al. (1951) found that penicillin or aureomycin afforded complete protection to dogs which had the arterial supply to the liver interrupted.

Successful ligation of the hepatic artery in man had been reported, at the time of our observations, on three occasions. All the ligations were done for aneurysm of the hepatic artery. Kehr (1903) ligated the artery distal to the point of origin of the gastroduodenal artery, and Sudeck in 1915, according to Kading (1919), and Colmers (1921) ligated it proximal to all its branches.

It seemed to us that under cover of antibiotics the hepatic artery could be safely tied close to its origin from the cœliac axis. As the result of experience gained later, the hepatic artery was tied distal to the point of origin of the gastroduodenal artery. Such an operation would be relatively simple and would lead to a significant reduction of the portal pressure. Further, it appeared from perfusion experiments that the rate of flow of the portal blood through the liver would be increased—a point of major importance, since Mann et al. (1931) have shown that portal blood is necessary for regeneration of the liver. On the other hand, Karn and Vars (1951) have shown that regeneration of the liver in rats is not impaired by ligation of the hepatic artery.

Simultaneous ligation of the splenic artery was considered desirable. First, there was the theoretical consideration of maintaining the anastomotic channels while denying to the portal system blood previously distributed to the spleen. Secondly, although our previous experience with ligation of the splenic artery alone rendered it very unlikely, there was the possibility that simultaneous ligation of the hepatic and splenic arteries might correct the hypersplenism and prove a simple substitute for splenectomy.

We were unaware of the extensive observations of Berman et al. (1950) on ligation of the hepatic artery in dogs (summarised by Berman et al. 1951a).

These workers confirmed that the dogs survived the operation when given penicillin and streptomycin. They showed that ligation of the hepatic artery reduced the portal pressure by 10–20 mm. H_2O and that subsequent ligation of the splenic artery reduced it further by 40–50 mm. Ligation of the splenic artery alone reduced the portal pressure by 5–10 mm. H_2O, and subsequent ligation of the hepatic artery reduced it further by 40–60 mm. They demonstrated radiographically the development of an extensive collateral circulation through the left gastric artery anastomosing with the right gastric artery and thence into the hepatic artery. In some cases there was also a blood-supply through the accessory hepatic artery.

From their experimental findings, coupled with a review of published perfusion experiments, Berman et al. concluded that ligation of the hepatic artery in cirrhosis of the liver parallels ligation of the arterial component of a cavernous hæmangioma. The operation would force arterial collaterals to form which would allow a capillary bed to arise within the liver, thereby permitting nourishment of the starved liver cells. They argued that a simultaneous reduction in portal flow was desirable so that the lateral pressure within the portal vein might not be great enough to occlude the new hepatic-artery capillaries. Reasoning thus they tied the splenic artery simultaneously. They reported (1951a) that they had performed the operation of simultaneous ligation of the hepatic and splenic arteries on 10 occasions, and they described 1 case in detail (1951b).

MATERIAL AND METHODS

All our patients were Chinese adult males with diffuse hepatic fibrosis of cryptogenic origin, the diagnosis being established by biopsy. As the operation was still untried, only cases with advanced cirrhosis and a very poor prognosis were considered. All had a history of two or more hæmorrhages from œsophageal varices, which were demonstrated radiographically in each case. All had tense ascites.

Case 6.—A Chinese male shop-assistant, aged 27, had seven massive hæmorrhages in the 12 months before operation.

TABLE II—HÆMATOLOGICAL FINDINGS BEFORE AND AFTER LIGATION OF HEPATIC ARTERY AND LIGATION OF SPLENIC ARTERY OR SPLENECTOMY

Case no.	Time	Red cells (million per c.mm.)	Hæmoglobin (g. per 100 ml.)	White cells					Platelets (thousand per c.mm.)	Sternal marrow	Operation
				Total (thousand per c.mm.)	Differential count (%)						
					Polymorphs	Eosinophils	Lymphocytes	Monocytes			
6	Before operation	2·8	7·5	2·1	52	3	45	..	79	Marrow hypercellular, hyperplasia of erythroid and myeloid elements, normoblastic erythropoiesis, increased megakaryocytes	Ligation of hepatic artery proximally and of splenic artery
	1 Month after operation	2·9	8·1	3·4	67	2	30	1	57		
	3 Months ,, ,,	3·6	9·5	2·9	53	2	45	..	..		
	6 ,, ,, ,,	3·3	8·9	2·0	58	12	30	..	44		
	7½ ,, ,, ,,	Splenectomy done									
	2 ,, ,, splenectomy	4·1	10·5	10·2	52	12	32	4	410		
7	Before operation	3·1	7·9	2·6	54	2	44	..	111		,,
	1 Month after operation	3·8	10·0	7·2	58	12	28	2	99		
	3 Months ,, ,,	3·7	10·5	3·1	50	3	45	2	..		
	8 ,, ,, ,,	3·5	10·1	3·0	48	5	47	..	100		
8	Before operation	3·8	11·0	3·1	60	6	34	..	78		,,
	3 Weeks after operation	4·0	10·8	11·2	82	2	16	..	112		
9	Before operation	3·4	7·9	2·9	58	2	38	2	82		,,
	1 Month after operation	4·0	10·5	6·2	58	12	30	..	98		
	3 Months ,, ,,	3·9	11·7	2·5	47	5	46	2	112		
	6 ,, ,, ,,	4·2	12·0	2·1	45	3	49	3	97		
10	Before operation	3·9	10·8	3·3	67	..	33	..	61		Ligation of hepatic artery proximally and splenectomy
	1 Month after operation	4·4	11·4	9·9	45	32	23	..	470		
	4 Months ,, ,,	4·9	12·9	11·7	47	6	47	..	320		
11	Before operation	4·0	11·4	2·2	62	6	30	2	86		Ligation of hepatic artery distally and splenectomy
	1 Month after operation	4·7	12·8	6·7	43	27	29	1	346		
	3 Months ,, ,,	5·1	12·1	7·8	54	18	28	..	370		
12	Before operation	2·7	7·8	2·2	48	2	47	3	44		,,
	1 Month after operation	4·0	10·9	10·2	62	15	23	..	360		
	3 Months ,, ,,	4·6	12·2	7·8	70	5	25	..	325		

TABLE III—RELEVANT AVAILABLE DETAILS OF PUBLISHED CASES IN WHICH HEPATIC ARTERY WAS TIED

Reference	No. of cases	Indication for operation	Results	Duration of follow-up	Operation
Rienhoff (1951)	2 (1)	Ascites	Resolution	3½ Years	Ligation* of hepatic and splenic arteries]
Markle (Rienhoff 1951)	2 (1)	Hæmorrhage	No recurrence	1 Year	,,
Lupo (Rienhoff 1951)	1	,,	,,	8 Months	,,
Berman et al. (1951b)	3	Ascites	Resolution	Unknown	,,
	1	,,	,,	6 Months	Ligation† of hepatic and splenic arteries
Leger et al. (1952)	5	,,	2 Deaths 3 Resolution	5–9 Months	Ligation† of hepatic artery (3); ligation† of hepatic and splenic arteries (2)
Jackson (Leger et al. 1952)	1	,,	Resolution	3 Months	Ligation of hepatic and splenic arteries
Darmaillacq (Leger et al. 1952)	1	Hæmorrhage	No recurrence	5 Months	Ligation† of hepatic artery
Thorek (Rienhoff 1951 and Leger et al. 1952)	5 (2)	Ascites	Resolution	Unknown	Ligation* of hepatic and splenic arteries
	5 (3)	Hæmorrhage	No recurrence	,,	,,

* Distal to origin of gastroduodenal artery. † Close to cœliac axis.

The last two hæmorrhages had precipitated hepatic coma. In the first 6 months after the onset of bleeding there was a variable ascites, but in the second 6 months the ascites became tense and, in addition to restriction of salt intake to 1 g. daily and diuretics, paracentesis was required about once in 14 days.

Wasting was marked. The liver was not felt, but the spleen was palpable 9 cm. below the costal margin. Pressure sores were present over the occiput and sacrum at the time of operation; these had developed 2 months before, during the hepatic coma following the last hæmorrhage.

Case 7.—A Chinese male labourer, aged 32, had five attacks of melæna and two severe hæmatemeses in the 10 months before operation. Ascites had been present for 9 months and followed the second attack of melæna. In the last 4 months paracentesis was required about once in 22 days in addition to salt restriction to 1 g. daily and diuretics.

Wasting was moderate. The liver was not enlarged, but the spleen was palpable 8 cm below the costal margin. Large lumbar collateral veins were present.

Case 8.—A Chinese male cook, aged 45, had two massive hæmatemeses in the 4 months before operation. Ascites had been present for 6 months, and before admission to hospital five paracenteses had been done, but after admission restriction of salt intake to 1 g. daily and diuretics partly controlled the ascites and, although much free fluid persisted, the abdomen was not tense.

Wasting was severe. The liver was not felt, but the spleen was palpable 5 cm. below the costal margin.

Case 9.—A Chinese male shopkeeper, aged 49, had two severe hæmatemeses in the 2 years before operation, but there was a history of five minor hæmatemeses extending over 5 years. Ascites had been present for 7 months, and for 2 months before operation, in addition to restriction of salt intake to 1 g. daily and diuretics, paracentesis was required about once in 16 days.

The liver was not felt, but the spleen was palpable 6 cm. below the costal margin. Large abdominal collateral veins were present.

Case 10.—A Chinese male messenger, aged 30, had two massive hæmatemeses in the 6 months before operation. Ascites had been present for 2 months, and before admission to hospital paracentesis had been done twice. After admission the ascites could be prevented from becoming tense by restriction of salt intake to 1 g. daily and mersalyl.

Wasting was severe. The liver was not felt, but the spleen was palpable 10 cm. below the costal margin. Large abdominal lumbar collateral veins were present.

Case 11.—A Chinese male cobbler, aged 21, had two massive hæmatemeses in the 6 months before operation, and repeated attacks of melæna of varying severity for 8 months. Ascites had been present for 3 months, and, in addition to salt restriction and diuretics, paracentesis was required twice in this period.

Wasting was moderate. The liver was not felt, but the spleen was palpable 7 cm. below the costal margin.

Case 12.—A Chinese male labourer (the same as case 1), aged 32, had three severe hæmatemeses in the 22 months before operation. The splenic artery was tied after the second hæmatemesis. At that time ascites had been present for 3 months. After the operation the ascites resolved and he remained moderately well for a year, when he had melæna for 3 days and then a massive hæmatemesis. After the bleeding, ascites reappeared and became tense and paracentesis was required in addition to restriction of salt intake to 1 g. daily and diuretics.

Wasting was moderate. The liver was not felt, but the spleen was palpable 2 cm. below the costal margin.

The hæmatological findings immediately before operation are set out in tables II and III. It must be emphasised that the red-cell counts and hæmoglobin levels cannot be regarded as a base-line, because in all the cases there had been recent severe hæmorrhage, and recovery from its effects may not have been complete.

Paracentesis was done in all the cases 48 hours before operation. For 12 hours before operation and 7 days thereafter penicillin 5 mega-units and streptomycin 3 g. a day were given intramuscularly in divided doses. In cases 6–9 the hepatic and splenic arteries were defined and tied close to their origin from the cœliac axis. In case 10 the hepatic artery was similarly tied and the spleen was removed, but in cases 11 and 12 splenectomy was combined with ligation of the hepatic artery distal to the origin of the gastroduodenal artery. No attempt was made to measure the portal pressure at operation.

No dietary restrictions were imposed in the immediate postoperative period, but from the 4th day, for 14 days thereafter, the salt intake was reduced to 2 g. a day. At the end of that time salt restriction was removed, and it was reimposed only in those cases where there was evidence of reaccumulation of ascitic fluid.

RESULTS

There was 1 death in the series (case 8). In this case the immediate postoperative period was satisfactory, but on the 22nd day after operation the patient refused food and became drowsy. Next day he was comatose and jaundiced. He remained in coma until his death on the 26th day. At necropsy a thrombus was found partially obliterating the lumen of the portal vein and extending into and obstructing the left branch. The liver showed extensive necrosis, but there was no evidence of infection.

The remaining 6 cases have been seen and investigated at intervals of from 6 to 12½ months after operation.

Except in case 6 there has been no further bleeding. Radiography 6 weeks after operation showed that œsophageal varices were no longer present in cases 10, 11, and 12, whereas in cases 7 and 9 the varices were still present but much less conspicuous than before operation. Further radiography 3 months after operation showed disappearance of the varices in case 7 but no change in case 9. The visible collateral veins in cases 7, 9, and 10 rapidly regressed after operation and could no longer be detected 4 weeks after operation.

Case 6 was readmitted to hospital 6½ months after operation with severe gastro-enteritis, from which he made a satisfactory recovery. Radiography at this

time showed œsophageal varices which, when compared with films taken before operation, showed no change. 14 days later the patient developed petechial hæmorrhages over both legs and had melæna for 48 hours. The platelets numbered 80,000 per c.mm., clot retraction was impaired, and there was increased capillary fragility. The bleeding-time was normal. Table II shows that pancytopenia had persisted after ligation of the hepatic and splenic arteries. Splenectomy was done, and the patient made an uneventful recovery. In the 5 months following operation there was no recurrence of bleeding but the œsophageal varices persisted unchanged.

Before operation the ascites, present in all the cases, could not be controlled adequately by medical measures, and in 5 cases paracentesis was required. From the 4th day after operation the intake of salt was restricted to 2 g. a day. After 14 days all the patients were given a full diet and the salt intake was not restricted. With unrestricted salt intake in cases 8 and 10 the fluid in the abdominal cavity increased, but in both cases after a further 4 weeks of restriction of salt to 2 g. a day a return to a normal salt intake was not followed by reaccumulation of fluid. Throughout the follow-up in all the cases, except case 12, a little free fluid has persisted in the abdominal cavity. This has shown no tendency to increase, is unknown to the patient, and constitutes no handicap. No free fluid can be demonstrated in the abdomen of case 12.

The hæmatological findings are set out in table III. which shows that all the cases had pancytopenia before operation. In the group in which ligation of the hepatic artery was combined with splenectomy the leucopenia and thrombocytopenia were corrected and there was a significant increase in the hæmoglobin levels and red-cell counts. This includes case 12, in which the splenic artery had been tied 12 months before without effect on the hæmatological findings. In the group in which the splenic artery was tied the hæmatological findings persisted substantially unchanged save for a transient correction of the leucopenia in cases 7, 8, and 9. In case 6 splenectomy $7^1/_2$ months after ligation of the hepatic and splenic arteries corrected the leucopenia and thrombocytopenia and raised the hæmoglobin level and red-cell count.

In all 6 surviving patients the appetite returned rapidly, weight was gained progressively, and muscular strength returned. All 6 are now fully employed, 2 of them in heavy manual labour.

DISCUSSION

From the literature available to us it seems that ligation of the hepatic artery in the treatment of cirrhosis of the liver with portal hypertension has been performed on 30 occasions.

Rienhoff (1951) reported 2 personal cases and referred briefly to 4 other cases—1 by Markle and 3 by Lupo. In an addendum to his communication he reported that the operation had been done in 6 further cases—4 by Thorek and 1 each by Hunt and Kunkel. Berman et al. (1951a) indicated that they had done the operation on 10 occasions, but Berman et al. (1951b) reported 1 case only in detail. Leger et al. (1952) reported 5 personal cases and referred to a further case by Thorek, and 1 each by Darmalliacq and Jackson. For many of the cases no details are available, but those available and relevant to this discussion are set out in table III.

Table III shows that there were 2 deaths, both in the series reported by Leger et al. (1952). One resulted from secondary hæmorrhage, and the other took place 3 weeks after operation from, possibly, hepatic coma. In our series there was 1 death, due to thrombosis of the portal vein about 3 weeks after operation.

Thrombosis of the portal vein in cirrhosis of the liver seems to have an exceptionally high incidence in Hong-Kong. McPherson (1951) reported an incidence of thrombosis of the portal vein in 6 of 98 cases of cirrhosis, whereas here in 174 cases we have encountered 16. The diagnosis in these cases was established either at necropsy or by the appearance of an unmistakable clinical syndrome. This does not represent the actual incidence, for in some cases a thrombosis may develop without clinical manifestations. Though complete occlusion of the portal vein can readily be detected at operation, partial occlusion cannot be determined; and we are doubtful whether radiography would assist. Such a partial occlusion, as in case 7, seems to predispose to further thrombosis. The occurrence of portal-vein thrombosis constitutes a definite hazard, and, because of this, the portal pressure was not measured, for we have encountered thrombosis following this procedure.

McPherson (1951) provocatively defined the place of surgery in portal hypertension as the treatment of bleeding—a contention made by Welch (1951). To this opinion we subscribed throughout our observations, and operation was restricted to patients who had two or more hæmorrhages from œsophageal varices. Further, we held that the effectiveness of the operation in preventing hæmorrhage could only be assessed in those who had already bled. Table III shows that hæmorrhage was the indication in 6 of the 19 cases of which records are available. In these cases in the follow-up of 5–12 months there was no further hæmorrhage.

In the present series, except case 6, there has been no further hæmorrhage from the gastro-intestinal tract in a limited follow-up of 6–11 months. Further, 6 weeks after operation radiography showed the disappearance of œsophageal varices in cases 10, 11, and 12. In cases 7 and 9 the varices, although still present 6 weeks after operation, were considerably reduced. Examination 3 months after operation showed complete disappearance of varices in case 7, but in case 9 no further change was noted. Visible collateral veins which were present in 3 cases before operation disappeared within 3 weeks. Berman et al. (1951b) reported disappearance of both œsophageal varices and collateral channels in their case.

Case 6 had a symptomless melæna for 2 days following an attack of severe gastro-enteritis. At that time there was a hæmorrhagic tendency associated with thrombocytopenia. Although large œsophageal varices were still present, it is difficult, in our opinion, to ascribe the bleeding to them. After splenectomy the tendency to bleed ceased, and in the ensuing 2 months there has been no further bleeding from the gastro-intestinal tract. Radiography 2 months after splenectomy still showed the œsophageal varices virtually unchanged.

In 2 of the 3 surviving patients treated by ligation of the hepatic and splenic arteries close to the cœliac axis œsophageal varices persist. In the 1 case treated by ligation of the hepatic artery in the same position and splenectomy, and in the 2 cases in which the hepatic artery was tied distal to the gastroduodenal artery and a splenectomy done, the varices disappeared within 6 weeks.

Berman et al. (1951a) thought that establishment of an anastomotic circulation via the right gastric artery is of importance; consequently they tied the hepatic artery close to the cœliac axis. This was the operation done by Leger et al. (1952). Rienhoff (1951), and presumably those workers referred to by him, tied the artery immediately distal to the origin of the gastroduodenal artery. One of Rienhoff's patients had an abdominal aortogram, which showed no filling in the region of the liver. Of our patients 4 have undergone splenectomy: in 2 it was combined with ligation of the hepatic artery close to the cœliac axis, and in 2 with ligation distal to the gastroduodenal branch. In the latter 2 there was prompt disappearance of œsophageal varices, whereas in the former the varices persist in case 6. These results, coupled with the aortogram reported by Rienhoff (1951), suggest that the development of the anastomotic circulation, described by Berman et al. (1951a) is to be avoided, and that ligation

distal to the origin of gastroduodenal artery may be the operation of choice. That the development of the anastomosis is unnecessary is indicated by the observations of Huggins and Post (1937) on the effects of removal of the hepatic artery in dogs. These workers showed radiographically that the only arterial supply in dogs subjected to this operation was by way of the phrenic arteries; yet no histological changes were observed in the liver.

From table III it will be seen that ascites was the indication for operation in 13 of the 19 published cases, and that the response was satisfactory. There was no recurrence in a follow-up ranging from 3 months to 2½ years. The effect of the operation in the present cases confirms these findings. The control of ascites, which may be regarded as resistant to medical measures before operation, has so impressed us that we now consider the operation indicated in ascites which cannot be readily managed by medical measures. This is of great importance in Hong-Kong, where ascites has a higher incidence than hæmorrhage and where the poor economic status of our patients renders medical treatment difficult. The persistence of small amounts of free fluid in the peritoneal cavity is of interest and is being investigated.

In the published cases no reports are available of the hæmatological findings before and after operation. In the present series the preoperative and postoperative findings are set out in table II, which shows that a significant difference emerges between those cases in which ligation of the hepatic artery was combined with splenectomy and those in which it was combined with ligation of the splenic artery. Apart from a transient effect on the leucopenia in cases 2 and 4, the latter operation did not correct the hypersplenism, whereas this was achieved in the 3 cases subjected to splenectomy. Further, in case 6 splenectomy done 8 months after the first operation brought the platelet and white-cell counts back to normal and raised the red-cell count and hæmoglobin level significantly. Case 12 is also of interest, in that splenectomy and ligation of the hepatic artery 12 months after ligation of the splenic artery alone corrected the hypersplenism which had persisted despite the earlier operation. We agree with Learmonth (1951) that the hypersplenism must be corrected, and in our opinion this can only be achieved by splenectomy. Berman et al. (1951a) considered that ligation of the splenic artery with conservation of the collateral channels arising from the splenic vein was desirable to reduce lateral pressure in the portal vein and to permit the development of a new capillary bed in the liver. The results in the 3 cases subjected to simultaneous ligation of the hepatic artery and splenectomy suggest that this is unnecessary.

After operation all the patients showed an increase in appetite, a rapid gain in body-weight, and progressive return of muscular strength. The happiest aspect is that they are now fully employed.

Though it would be premature to comment on the effect of the operation on the disease in the liver, it may be stated that in the 6 surviving patients the operation had no deleterious effect on the liver microscopically or on liver function. Indeed, the evidence which is accumulating suggests that liver function may be improved.

A major worry throughout our observations had origin in the perfusion experiments reported by McIndoe (1928), who showed that, if the portal vein of the cirrhotic liver was perfused at a pressure of 20 mm. Hg, 86–100% of the perfusing fluid could be collected from collateral channels and, at most, 14% from the hepatic vein. Since the collaterals are given off at presinusoidal levels, ligation of the hepatic artery would cut off the main, or in some cases the only, blood-supply, unless the collateral channels closed, and ischæmic necrosis would result. Though this has not been encountered, the reported cases of ligation of the hepatic artery are few, and we feel it must be regarded as a definite risk. Further, we have assumed that, in cirrhosis, the flow of blood through the hepatic artery greatly reduces the flow of portal blood through the liver, but the perfusion experiments of Dock (1942) showed that this reduction varied widely; indeed in some cases of cirrhosis the reduction in portal-vein flow produced by simultaneous perfusion of the hepatic artery was less than in normal livers. In view of these considerations it is our opinion that the operation should be restricted for the present to cases of advanced cirrhosis with poor prognosis.

Summary

In an effort to provide a technically simple and effective substitute for portacaval shunts, two operations —ligation of the splenic artery and ligation of the hepatic artery—have been assessed as regards their effectiveness in preventing further hæmorrhages from œsophageal varices and their effect on the varices, ascites, and hypersplenism.

LIGATION OF SPLENIC ARTERY

This operation was performed in 5 cases with a history of one or more hæmorrhages from œsophageal varices. The 4 patients followed up had recurrence of bleeding, which in 2 cases was fatal.

No effect was exerted on the varices and other collateral channels when present. Ascites was present in 3 cases, and in 2 it was uninfluenced by the operation; a doubtful effect was exerted in the 3rd case. The operation failed to correct the hypersplenism which was present in all the cases.

Other published cases are discussed, and it is concluded that the operation is useless.

LIGATION OF HEPATIC ARTERY

This operation was performed in 7 cases with a history of two or more severe hæmorrhages from œsophageal varices. In 5 cases the artery was tied close to the cœliac axis, and in the remaining 2 immediately distal to the origin of the gastroduodenal artery. In the first 4 cases the splenic artery was tied simultaneously, and in the last 3 the spleen was removed.

There was 1 death, some 3 weeks after the operation, due to thrombosis of the portal vein. In a follow-up ranging from 6 to 12½ months in the 6 surviving cases there has been no further hæmorrhage from œsophageal varices. The varices have disappeared in 4 cases, have been substantially reduced in 1 case, and persist unchanged in 1 case. The ascites has been controlled.

Hypersplenism was corrected in the 3 cases in which the spleen had been removed, but persisted in the 3 remaining cases in which the splenic artery had been tied. Splenectomy in 1 of these cases, 7½ months after the first operation, corrected the hypersplenism.

All the surviving patients, previously invalids, are now fully employed.

Of the modifications used, ligation of the hepatic artery distal to the gastroduodenal branch, combined with splenectomy in the presence of hypersplenism, is the operation of choice. This operation has proved satisfactory in the limited period of follow-up.

We wish to thank Mr. John Gray, who operated on 1 of the patients, and gave us much valuable advice and criticism.

ADDENDUM

Since this paper was written ligation of the hepatic artery has been performed in 8 further cases. In 2 of these it was done in the course of repeated massive hæmatemesis; after the operation there was no further bleeding. Among the remaining 6 cases there have been 2 deaths from massive necrosis of the liver; in 1 the portal vein was thrombosed, but in the other the vein was patent and there was no evidence of infection. In this last case it would appear that our fears that ligation

of the hepatic artery might in some cases deprive the liver of its main or only blood-supply have been realised.

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INTRA-AORTIC BLOOD-TRANSFUSION

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THERE is now much evidence that, for blood-transfusion in severe oligæmic shock, the intra-arterial route offers important advantages over the intravenous. Experimental work (Wiggers and Werle 1942, Kohlstaedt and Page 1943, 1944, Glasser and Page 1948, Negovsky 1945a, Mallet-Guy et al. 1949, Jones et al. 1950, Holden et al. 1950) has demonstrated the following facts:

(1) Dogs which have been exsanguinated to the point of respiratory and cardiac arrest can be revived by intra-arterial but not by intravenous transfusion. Indeed, rapid intravenous transfusion hastens death.

(2) In partially exsanguinated dogs the quantity of blood required to restore the blood-pressure to normal is only half as large if it is given by the intra-arterial rather than the intravenous route.

The reason why the intra-arterial route gives greater success is that rapid intra-arterial transfusion raises the general systemic arterial pressure and with it the coronary-artery pressure (Veal et al. 1952). Consequently the coronary blood-flow is increased and the myocardium can recover from its depressed state. Rapid intravenous transfusion, on the other hand, increases the venous return and so throws an added strain on the heart muscle, without at the same time improving its blood-supply.

These findings are amply supported by clinical observations. Several workers (Negovsky 1945b, Porter et al. 1948, Robertson et al. 1948, Bingham 1952) have reported series of cases, up to 100 in number, in which intra-arterial transfusions were given. They are unanimous in the conclusion that oligæmic shock can be combated more quickly and effectively in this way than by intravenous transfusion.

Hitherto infusions have been made into peripheral arteries, either the radial (Page 1949, Porter et al. 1948, Bilsland 1951, Brown 1951, Bingham 1952), femoral (Liaras et al. 1949), dorsalis pedis (Bingham 1952), iliac (Lugarisi 1949, Devitt and Wigderow 1951), or common carotid (Constantini et al. 1951). Often a cut-down operation with insertion of a cannula has been required, and the artery has had to be tied afterwards or undergoes obliteration by thrombosis. There is serious danger to the lower limb when this happens in the femoral artery (Liaras et al. 1949), and gangrene of the hand, in whole or part, has followed the use of the radial artery (Porter et al. 1948, Bingham 1952). Discoloration of the skin of the forearm and hand, with blistering, has been reported after transfusion into the radial artery. Furthermore, there may be difficulty in entering the lumen of a contracted peripheral artery in severe shock, and the vasoconstriction may interfere seriously with the transfusion (Porter et al. 1948).

These risks and difficulties act as deterrents and cause intravenous transfusions to be made when the arterial route would be more effective. There is, therefore, need for a method which is free from complications. Such is intra-aortic transfusion (Haxton 1952), which has now been in use for more than eighteen months. It was conceived from experience with some hundreds of lumbar paravertebral sympathetic blocks, in which I found that the aorta could be easily punctured from the left side and that no sequelæ resulted. From this observation the technique of intra-aortic transfusion has evolved.

METHOD

The patient lies either fully on the right side, or midway between this and supine, supported by sandbags under the pelvis and left scapula. A skin weal is raised with 2% procaine at a point opposite the third lumbar vertebra (just above the level of the umbilicus) and in the line through the tip of the 11th rib and the highest point of the iliac crest. In practice, this point is rather more than a hand-breadth from the dorsal midline, and is about 3·5 cm. lateral to that used for lumbar sympathetic chain block (Haxton 1953). The reason is that the needle must be inserted more nearly transversely to reach the aorta as it lies on the anterior surface of the vertebral body.

A track down to the front of the vertebral body is infiltrated with 2% procaine through a 12-cm. needle, and then the skin is nicked with a fine knife. A special stepped needle, with a stem 14·5 cm. long and 2·8 mm. in diameter terminating in a section 1 cm. long and 1·5 mm. in diameter, is inserted along this track. The step on the needle is made fairly abrupt so as to prevent the passage of the thicker section into the aorta, and this arrangement necessitates a moderate amount of pressure to get the needle through the lumbar fascia. The needle is manipulated until its point slides on to the anterior surface of the vertebra. There a resistance is felt when the point encounters the aorta, and insertion for a further 1 cm. results in a pulsating flow of blood.

The needle is then connected to a transfusion apparatus, which may consist simply of the standard equipment found in hospitals, with the addition of a pressure bulb and air reservoir (conveniently the bulb and cuff from a sphygmomanometer). It is advisable, however, to use a

modified filter and to reverse the attachments to the glass tubes which enter the bottle, so that it may be used in the upright instead of inverted position (fig. 1). This reduces the possible mess should the stopper blow out of the bottle, but actually a simple clip is used to prevent this happening. A more elaborate apparatus can easily be made up from ordinary transfusion sets, with the addition of a Y-tube, a three-way tap, and a sphygmomanometer (fig. 2). With this, blood or saline solution can be run in at will, and continuity in the administration of blood is more easily maintained. Furthermore, readings of the intra-aortic blood-pressure, and also of the pressure at which blood is delivered to the needle, can be made.

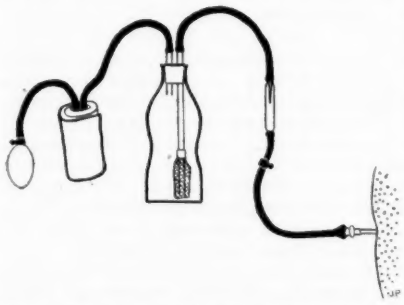

Fig. 1—Simple apparatus, with bottle upright, for intra-aortic blood-transfusion.

If the manometer pressure is kept 200 mm. Hg above the mean aortic pressure, a pint of blood can be delivered in three minutes. In most cases a rate of about one pint in five minutes was used, and two pints was the largest quantity required to restore the blood-pressure to normal and to give a pulse of good quality. The blood-flow through the drip chamber usually has a pulsatile character which confirms that the needle is in the aorta. If there is any doubt, the needle is momentarily disconnected and the retrograde flow inspected.

At the completion of the transfusion the needle is withdrawn about 1 cm. to allow the blood which escapes from the puncture in the aorta to leave the body instead of forming a hæmatoma. When the flow ceases, as it does in a minute or less, the needle is withdrawn.

In children and infants smaller and shorter needles without the step are used.

RESULTS

In all, 20 patients, ranging in age from 2 days to 84 years, have been transfused by the intra-aortic route, and in 3 of these the transfusion has been repeated. Owing to the serious nature of the illness, there have been some fatalities; but in only 1 case did the transfusion appear to have a deleterious effect. In this case, an infant with recurrent intestinal obstruction, a temporary improvement in the blood-pressure was followed by a fall despite continued transfusion, and the infant died with signs of heart-failure. It was thought that possibly too large a transfusion had been given, though necropsy provided no evidence of this. Another patient, moribund from a perforated peptic ulcer combined with hæmatemesis and superimposed on advanced phthisis, rallied only temporarily. In all the others there was a dramatic and rapid improvement in the general condition. The blood-pressure rose quickly, even with as little as 200 ml. of blood; the pulsations became stronger, and the colour of the lips and face improved rapidly. Several patients stated immediately that they felt very much stronger.

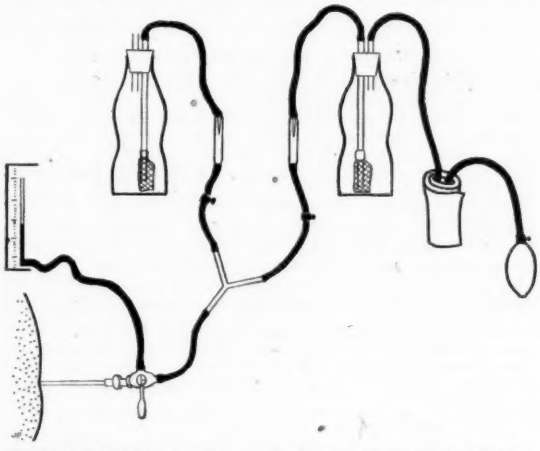

Fig. 2—More elaborate apparatus for intra-aortic blood-transfusion.

No pain in the back was experienced, apart from the transient discomfort during the insertion of the needle and slight backache for a few days in a few patients. The commonest complaint was a tingling in the legs and feet, which passed off as soon as the transfusion ended. This was at first attributed to the use of cold blood, producing vasospasm either in the lower limbs or spinal cord; and, indeed, the first case showed much pallor of the skin of the thighs and buttocks, followed by hyperæmia when the transfusion ended. But the symptoms are felt even when the blood is warmed before infusion. My colleague, Dr. M. D. Milne, has drawn my attention to the paræsthesia experienced with high concentrations of citrate in the blood, and it seems very probable that while infusion is in progress the blood in the lower limbs will contain enough citrate to produce tingling.

Some examples may serve to illustrate the use of the method.

The first case was that of a baby 2 days old and moribund from congenital obstruction, in whom attempts to introduce blood into veins and into the superior sagittal sinus had failed. An aortic transfusion of 50 ml. was given quickly and easily, and was repeated after an exploratory operation.

A woman had a hæmoglobin level of 2 g. per 100 ml. owing to continued hæmorrhage from an inoperable carcinoma of the bladder. After rather heavy premedication her blood-pressure fell and her pulse became impalpable, with the result that blind needling of the femoral artery proved impossible. She had gasping respiration and appeared on the point of death when the aortic transfusion was set up. At that stage the mean aortic pressure was 40 mm. Hg. After 250 ml. of blood had been given quickly, the pressure rose to 60 mm. Hg, and the pulses were palpable; and after 500 ml. the pulses were of good volume, the blood-pressure was 90 mm. Hg, and the lips had regained a fair amount of colour.

In 4 cases repeated hæmatemesis from peptic ulcer had reduced the patient to a poor general condition, with low blood-pressure and a rapid thready pulse. After the transfusion of $1^1/_2$–2 pints of blood their blood-pressure, pulse, and general condition were so much improved that immediate partial gastrectomy was considered feasible and was successful.

All the other patients felt and looked greatly benefited by the intra-aortic transfusion.

DISCUSSION

The aorta has many advantages over the peripheral arteries as a site for transfusion. It is constant in position and is relatively fixed by the lumbar arteries. It contains little muscle tissue and so cannot go into spasm, and its width and the rapidity of its blood-flow are sufficient to preclude any chance of obstructive thrombosis resulting. The aorta can usually be entered in a few seconds, and its depth from the surface and the elasticity of its walls prevent the needle from shifting once it is in position. It has been argued that in older patients atheromatous plaques might impede the passage of the needle or might be detached and become

emboli. Experiment has shown, however, that the relatively fine point used will pass quite easily through the ordinary atheromatous plaque without causing any detachment.

The vertebral level at which the needle is introduced is important. Above the third lumbar vertebra there is a danger of damage to the left kidney, and below it the aorta bifurcates and could be missed. The possibility of puncture of the descending colon by a needle inserted too far anteriorly must also be borne in mind.

In selecting the type of needle to be used there are two conflicting considerations: the bore must be large enough to allow a rapid flow of blood, but the puncture in the aorta must be small if leakage is to be minimised. A compromise is reached in the stepped needle, in which there is only a short length of relatively small bore. With this needle a pressure difference of 200 mm. Hg between the two ends gives a rate of blood delivery of 180 ml. per minute. With a 12-cm. Labat needle 1·1 mm. in diameter, on the other hand, this pressure gives a rate of flow of only 13·5 ml. per minute.

The stepped needle can also be used, with advantage, for aortography, because 20–40 ml. of 70% diodone can be injected quickly without great force. If fine needles are used, a pressure of 45 lb. (2326 mm. Hg) per square inch may be needed for even moderate rates of injection (Doss 1944).

As has been pointed out (Haxton 1952) the aorta is directly accessible when the thorax or abdomen is open, and transfusion into it can be made easily and quickly should the need arise during operation. As an example, a patient of mine was recently operated on by the resident surgical officers H. A. Simmons and J. P. Flanagan, for recurrent severe hæmatemesis from a large duodenal ulcer. After the abdomen was opened, a pint of blood was rapidly transfused through a stepped needle inserted, under vision, into the aorta. The patient's general condition was greatly improved, and partial gastrectomy was safely carried out. It is now our practice to keep the necessary apparatus sterilised in a drum so that an intra-aortic transfusion can be set up at very short notice. If all hospitals did likewise, it seems certain that some lives could be saved which would otherwise be lost.

SUMMARY

Experimental and clinical evidence indicates that, in states of severe shock and exsanguination, the intra-arterial route for blood-transfusion is superior to the intravenous route.

Transfusions into peripheral arteries are subject to difficulties due to spasm and to dangers from subsequent ligation or thrombosis.

Transfusion into the abdominal aorta at the level of the third lumbar vertebra with a special stepped needle has proved simple and free from complications in 20 cases.

In cases with repeated gastro-intestinal hæmorrhage this method has rapidly restored the general condition and has allowed the safe performance of early operation. In other cases with acute oligæmia rapid improvement with transfusions of moderate size has been the rule.

Transfusion can be made under vision into the aorta during thoracic and abdominal operations, should the need arise.

A plea is made for keeping the necessary apparatus sterile and at hand, ready for immediate use.

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A TRIAL OF ISONIAZID IN RAT LEPROSY

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RAT leprosy occurs as a natural infection in various parts of the world. It is a slowly progressive fatal condition which may be predominantly musculocutaneous or glandular. In the musculocutaneous form the animal is emaciated, the skin becomes atrophic and ulcerated, and the deeper layers are replaced by a greyish-white granular material. In the other form the inguinal, axillary, cervical, and other glands are enlarged, hard, and white. The causative organism is an acid-fast bacillus, *Mycobacterium lepræ murium*, which has so far not been definitely cultivated, though claims have been made from time to time. Recently Hanks and Soule (1949) failed to confirm such claims made by Ashbel and Poljakoff (1948). In the diseased rat, enormous numbers of bacilli are found in the corium and subcutaneous tissue, mostly in the cells of the granulation tissue, and in large cells with much cytoplasm, resembling the lepra cells of human leprosy, but without vacuoles. They are also found in large macrophages densely packed in the sinuses of the glands. The mode of natural infection is not known but the organism probably enters through cutaneous abrasions.

Rat leprosy can be reproduced experimentally by the intraperitoneal inoculation of infected material. The animals usually die in four to ten months with gross lesions. The omentum is converted into a huge hard mass of opaque pale-yellow material, consisting of collections of cells containing very large numbers of acid-fast bacilli. The diaphragm is replaced by similar material and the mediastinal and other glands are grossly enlarged, hard, and pale-yellow in colour.

Rats cannot be infected from human cases of leprosy. It is therefore probable that the human leprosy and the rat leprosy bacilli are different, although a few observations suggest that some cases at least of human leprosy are caused by the rat leprosy bacillus (Wilson and Miles 1946). The similarity between the two diseases suggested, however, that it would be worth investigating the effect of isoniazid on the course of experimental rat leprosy.

EXPERIMENTAL METHOD

The strain of rat leprosy bacillus used in this work was provided some years ago by Dr. A. Q. Wells, and has been maintained by intraperitoneal passage in rats. The inoculum was obtained from a rat infected two

MR. HAXTON: REFERENCES—*continued*

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months previously. The animal was killed, and a piece of infected omentum, removed with sterile precautions, was homogenised in the Waring blender. The material was then diluted with saline and 1·5 ml. was injected intraperitoneally into each of 40 rats. Films of the suspension showed about 20 acid-fast bacilli per field ($^1/_{12}$ in. oil-immersion objective and × 6 eyepiece).

The animals were female white rats weighing about 160 g., divided into four groups, each of 10 rats. The mean weights of the four groups did not differ appreciably. Observations made before the start of the experiment determined the average amount of a standard diet (M.R.C. diet no. 41) normally eaten each day by a group of rats. This amount, pulverised and throughly mixed with the drug, was reconstituted into cubes and fed to the animals under treatment. The preparation of isonicotinic acid hydrazide used was 'Pycazide.' The daily dose was 20 mg. per kg. body-weight.

The groups were lettered as follows:

Group A.—Untreated controls.

Group B.—Those receiving isoniazid for four weeks, starting on the day of infection.

Group C.—Those receiving isoniazid for twenty weeks, starting on the day of infection.

Group D.—Those receiving isoniazid for four weeks, starting four weeks after infection.

RESULTS

All the rats that died were fully examined, and microscopic preparations were made from the omentum and other organs showing lesions. The results are shown in the accompanying table. Intercurrent disease appeared in groups B and D, and the table therefore shows separately deaths due to rat leprosy and deaths due to other causes. All the rats that died from causes other than rat leprosy had large abdominal abscesses from which proteus or *Bacterium coli* was isolated. The occurrence of this lesion in 12 rats in groups B and D may have been assisted by cannibalism of the animals first succumbing to it. It is possible that these lesions are not entirely independent of rat leprosy and that they may represent leprosy lesions which regressed and later became secondarily infected with gram-negative bacilli; but a careful microscopic search of the walls of these lesions revealed only an occasional acid-fast bacillus in some of the animals. The absence of these "non-specific" lesions in group C might, on this hypothesis, be correlated with the longer period of treatment with isoniazid; but clearly this question requires further investigation. The rats that died of rat leprosy all had very extensive lesions, as described above, and films from these lesions showed hundreds of acid-fast bacilli in every field.

CAUSES OF DEATH IN RATS DYING AT VARIOUS TIMES AFTER INFECTION WITH RAT LEPROSY

Weeks	Group A		Group B		Group C		Group D	
	Rat leprosy	Abdominal abscesses	Rat leprosy	Abdominal abscesses	Rat leprosy	Abdominal abscesses	Rat leprosy	Abdominal abscesses
0–4	..	..	..	..	..	..	..	..
5–9	..	..	..	1	..	..	..	1
10–14	..	..	..	1	..	..	..	2
15–19	..	..	..	..	..	..	..	1
20–24	..	..	..	3	..	..	..	1
25–29	2	..	..	..	..	..	..	..
30–34	4	..	..	..	..	..	..	1
35–39	2	..	2	..	..	..	..	..
40–44	1	..	..	1	..	..	..	..
45–46	1	..	..	..	..	..	..	..
Totals	10	..	2	6	..	..	..	6

At the beginning of the experiment there were 10 rats in each group.

In the forty-six weeks that have elapsed since infection, all the untreated rats have died of rat leprosy. All the rats that received isoniazid for twenty weeks are alive and appear to be in good health so far. In groups B and D respectively, 8 and 6 rats died at various times from the 9th week onwards, but only 2, both in group B, showed signs of rat leprosy. No deaths from rat leprosy occurred before the 25th week. Of the 20 rats that had some treatment and survived to the 25th week, only 2 died of rat leprosy, compared with 10 out of 10 in the untreated control group.

DISCUSSION

Comparison of the results observed in groups A and C makes it clear that the prolonged course of treatment with isoniazid had had a beneficial effect on the course of the disease. The experience of the other two groups suggests that shorter courses may also be effective. Observations made during the treatment of tuberculosis with isoniazid show that resistant organisms may appear. For this, among other reasons, the surviving rats will have to be observed for many more months. The results, along with other work work in progress, will be reported later.

A preliminary report on the present stage of the experiment has seemed justified, because Goulding et al. (1953) have recently published the results of a trial of isoniazid and other drugs on mice infected with *Myco. lepræ murium* by the intracorneal route, and others will probably contemplate making further tests of isoniazid in rat leprosy. Goulding et al. found that the drug showed a striking suppressive effect on intracorneal infection. Perhaps the trial now reported, in which a systemic infection was produced in the natural host by intraperitoneal inoculation with a massive dose of rat leprosy bacilli, provides a more impressive test of the effect of isoniazid.

Since this work reached its present stage, two other reports on the effect of isoniazid on rat leprosy have appeared. Chaussinand et al. (1953) found that the drug suppressed the infection in rats injected subcutaneously, treatment being started either the following day or, delayed until the 17th day. Barnett and Bushby (1953), who inoculated white mice intravenously and observed them for 180 days, found that isoniazid given throughout the experiment almost completely suppressed the infection. They give their reasons for considering that the action of drugs on *Myco. lepræ murium* may be of value in forecasting their activity in human leprosy.

SUMMARY

Preliminary results in a trial of isoniazid in experimental rat leprosy indicate that the drug has a beneficial effect on the course of the disease.

I wish to thank Dr. D. McAnally, of Herts Pharmaceuticals Ltd., for a generous supply of 'Pycazide,' and Mr. B. Madge for his efficient technical assistance.

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"One should remember also that everything that we value is connected with the transference of energy from places where there is much to places where there is little, and that this process is irreversible. When energy has become evenly distributed throughout the universe there will be no more life, and therefore no more philosophers. I leave it to each reader to decide whether this will be the millennium."—BERTRAND RUSSELL, *Manchester Guardian*, March 14, 1953, p. 4.

INFECTED ARTERIOVENOUS FISTULA IN THE LUNG

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THE association of multiple hereditary telangiectasia with polycythæmia, clubbing, cyanosis, and a shadow in the lung with murmur and sometimes a thrill is well known, and many cases of pulmonary arteriovenous aneurysm have now been described (Crane et al. 1949, Baker and Trounce 1949, Hayward and Reid 1949, Duisenberg and Arismendi 1949). Yater et al. (1949) give a useful survey of the published cases but prefer the term arteriovenous fistula, indicating a direct communication between artery and vein without interposition of capillaries and a "false aneurysm."

The only previously published case claimed to be infected (Maier et al. 1948) was very doubtful. The patient, a young woman aged 20, had at the time an abscess at the right ankle and a left-sided empyema both caused by a non-hæmolytic streptococcus, which was also obtained by culture from the blood. She was cured with intramuscular penicillin, instillations of penicillin into the empyema, and sulphadiazine by mouth. Subsequently she underwent lobectomy and the inside of the aneurysmal sac had, on its wall, a thickened area which was thought to represent the site of previous vegetations. The scanty evidence of infection of the sac and the presence of other severe localised sepsis quite likely to cause a septicæmia make the diagnosis doubtful. Thickening will occur from organisation of non-septic clot. Our own case even shows some calcification radiologically in the wall of the sac.

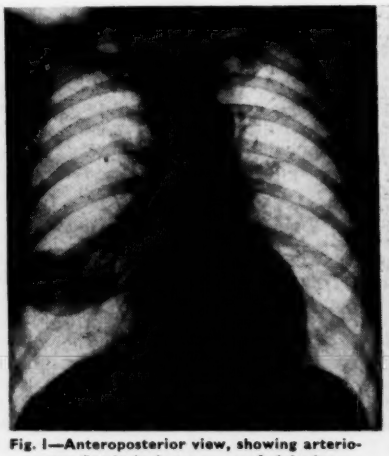

Fig. 1—Anteroposterior view, showing arteriovenous fistula in lower zone of right lung.

Fig. 2—Lateral view, showing arteriovenous fistula in middle lobe of right lung.

CASE-RECORD

A thin, plethoric, and cyanosed man, aged 58, had in the past been known at times to be polycythæmic and at times to have had an iron-lack anæmia. His liver was moderately enlarged and his spleen just palpable. He had clubbing of the fingers, was hypertensive, and had multiple telangiectases on lips, face, and tongue, with flecks under his nails. There was a family history of this condition affecting his maternal grandmother, his mother, himself, and, to a slight extent, his two children, one male and one female. He was admitted to the Bushey and District Hospital in late September, 1950, with a history of two weeks' high temperature (99°–102°F) and pain in the back. He had no cough but was found to have a *Bacterium coli* infection of the urine, although there were only about 10 pus cells per one-sixth field in centrifuged deposit. A blood-culture made at the same time was reported as growing a *Staphylococcus pyogenes*, which the laboratory regarded as "probably a contaminant."

Treatment and Progress.—Shortly after admission the patient's auricles began to fibrillate, and he was given digitalis. After three days his heart returned permanently to regular rhythm. His *Bact. coli* infection was treated with streptomycin, and his temperature, which had risen to 103°–104°F, fell during the next few days. After he had been apyrexial for a week on the cessation of his chemotherapy his temperature rose again to the same heights. By this time stool-cultures had been shown to be normal and to contain no microscopic abnormality. Widal tests were negative except for a rise in titre which was finally concluded to be due to previous inoculation in the Army. His white blood-cell count had risen from 7000 to 16,000 per c.mm. (polymorphs 95%).

On Oct. 12 he was very sick, with a very high temperature, pulse-rate 110, and no signs of pulmonary consolidation; his spleen was not felt; his liver was just palpable. There were normal heart sounds in the precordial area, but a systolic murmur with a doubtful early diastolic addition was audible in the front of the *right* lower chest and in the *right* axilla. Radiography of the chest disclosed in the right lower zone a shadow (figs. 1 and 2) which in lateral views was shown to be in the middle lobe. A second blood-culture again produced a *Staph. pyogenes* sensitive to penicillin, aureomycin, and chloramphenicol. As soon as this was known, the patient was given penicillin 1 mega-unit four-hourly.

The diagnosis of arteriovenous fistula of the lung associated with his telangiectasia was now clear, and the *Staph. pyogenes* septicæmia was thought to be due to an infection in the aneurysm. The murmur changed somewhat, and by Oct. 19 there was a complete round-the-clock machinery murmur with a palpable thrill in the left axilla. It was loudest during full inspiration. Despite 6 mega-units of penicillin a day the patient's temperature remained about 100°F until Nov. 4. Aureomycin 500 mg. six-hourly was then added for four days, and then, owing to nausea and vomiting, reduced to 250 mg six-hourly. The patient's temperature gradually settled, and he had no further pyrexia after Nov. 12. He refused lobectomy.

Follow-up.—The patient was seen again in October, 1952, two years after his septicæmia. He was then slightly anæmic from repeated bleedings from his nasal telangiectasia but otherwise well. He was not dyspnœic, and there was no evidence of cardiac embarrassment. The murmur in his right lower chest was now absent on full expiration, systolic on half-inspiration, and a full round-the-clock machinery murmur with thrill on full inspiration. Radiography in two planes showed no change in the size of his middle lobe shadow.

SUMMARY

A typical case of pulmonary arteriovenous fistula associated with multiple hereditary telangiectasia is described.

The patient had a *Staph. pyogenes* septicæmia with no apparent localised sepsis, and infective endarteritis of his fistula is thought the most likely explanation. He was cured with penicillin and aureomycin and is well two years later.

Only one similar case with infection has been previously published, but it was associated with other possible and even likely sources for the septicæmia.

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THE KIDD (ANTI-Jk^a) HÆMAGGLUTININ
A THIRD EXAMPLE

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A PREVIOUSLY unidentified blood-group antibody, which was found to agglutinate the red cells of 77% of white inhabitants of Boston, Mass., was described by Allen et al. (1951). The antigen present in such red cells is known as the Kidd, or Jk^a, antigen, and the antibody as anti-Kidd or anti-Jk^a. Hunter et al. (1951) have reported the finding of an antibody of apparently identical specificity. The discovery of a third example is now reported in a Scotswoman.

When her blood was examined on Sept. 15, 1950, Mrs. C., aged 29, was found to belong to group O, R_1r (CDe/cde). She was suffering from debility and gross anæmia after giving birth to apparently healthy twins a few weeks before. Her previous obstetric history showed six full-term normal births and one stillbirth, the latter with no signs of hæmolytic disease of the newborn. She had never received a transfusion or injection of blood.

Irregular antibodies were discovered on routine direct matching of donor bloods against the patient's serum, and it appeared that at least two such antibodies were present in the serum. One of these agglutinated saline suspensions of red cells of all bloods carrying the Rh antigen E and was most active at 37°C. Of the panel of cells which were not agglutinated in saline suspensions by the patient's serum the majority gave a positive indirect anti-globulin (Coombs) test, but a few gave clear negative results. These antibodies were best detected at 37°C. In addition to these two antibodies the patient's serum contained anti-P active only at temperatures about 4°C.

The patient's complete blood-groups were:

ABO	*Rh*	*MN*	*S*	*P*	*Lu*	*Kell*	*Le^a*	*Le^b*	*Fy^a*
0	R_1r (CDe/cde)	M	−	−	−	−	−	+	+

Her serum was examined against an extensive panel of cells by the anti-globulin technique. The frequency of negative reactions was about 10%, and the unidentified antibody detectable by this technique did not appear to conform to any known antibody.

At this time some serum from Mrs. Kidd (Allen et al. 1951) became available. Mrs. C. was found to be Kidd-negative, whereas her husband and all her children were Kidd-positive. At the same time most of the members of the staff of the Lister Institute were tested with anti-Kidd serum by Dr. R. R. Race and Dr. Ruth Sanger. Dr. Race and Dr. Sanger also absorbed the anti-E from some of the serum of Mrs. C., using E-positive Kidd-negative red cells, and tested some of the same staff members with the resulting serum; they have kindly allowed us to make use of their results. We also tested some E-negatives with the unabsorbed serum. In both cases some individuals were selected because they were Kidd-negative. The numbers given, therefore, do not represent the true frequencies of the Kidd groups in the British population. In all, 54 unrelated persons were tested with anti-Kidd and with the absorbed or unabsorbed serum of Mrs. C.: 39 were positive with both and 15 negative with both; there were no discrepancies. The chance of such a situation occurring accidentally with two unrelated sera is infinitesimal, and there can be no doubt that Mrs. C.'s serum contains anti-Jk^a in addition to anti-E and anti-P.

In addition to the tests mentioned above, the serum of Mrs. C. was used to test samples from 105 Africans (all E-negative), of whom all but 5 gave a positive reaction (Ikin and Mourant 1952).

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ELECTROCARDIOGRAPHIC CHANGES AFTER NEPHRECTOMY

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BUNDLE-BRANCH block (intraventricular block), at one time regarded as irreversible, may appear transiently in many forms of heart-disease, and may be temporarily induced in diseased hearts by such factors as tachycardia, infection, and anæmia (Sandberg et al. 1951). The electrocardiographic tracings reproduced here show that normal conduction replaced left bundle-branch block after nephrectomy in a patient with hypertensive heart-disease. This seems an unusual event, though electrocardiographic changes after sympathectomy for hypertension have been widely studied. Cardiac failure, for the relief of which the operation was planned, was only temporarily improved, but normal conduction persisted to the last tracing taken.

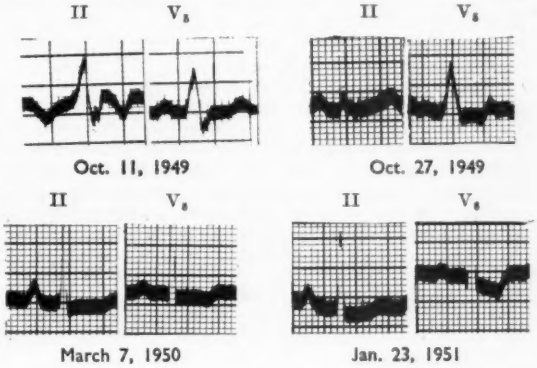
CASE-RECORD

A single woman, aged 35, was admitted to hospital on Oct. 8, 1949, with a history of shortness of breath for eleven months, anginal pain for five months, and œdema and orthopnœa for a week.

Examination showed a blood-pressure of 185/130 mm. Hg, cardiac enlargement with triple rhythm, numerous crepitations in the lungs, a palpable tender liver, and some sacral œdema. The diagnosis of hypertensive cardiac failure was supported by the radiological appearance of the heart. Electrocardiography on Oct. 11, 1949, showed left bundle-branch block with a Q R S lasting 0·16 sec. in the standard limb leads (see figure), and delayed intrinsicoid deflection in the left precordial leads. Further investigation indicated that all that remained of the left kidney was a hydronephrotic sac.

Treatment and Progress.—Rest and digitalisation improved the cardiac failure to some extent, but an electrocardiogram on Oct. 27, 1949, showed little change (see figure). A left nephrectomy was done by Mr. Terence Millin on Oct. 31, 1949.

Postoperatively there was further improvement in the cardiac failure: triple rhythm was no longer audible, and the blood-pressure rose to 205/130 mm. Hg. Most striking,



however, was the disappearance of the bundle-branch-block pattern from the electrocardiogram, that recorded on March 7, 1950, showing a Q R S lasting 0·06 sec. (see figure). The pattern of left ventricular hypertrophy was present.

Follow-up.—After discharge from hospital the patient resumed work as a secretary and did not complain of shortness of breath. She continued at work for a year with a blood-pressure about 250/150 mm. Hg, but with normal conduction in the electrocardiogram. In December, 1950, she was readmitted to hospital with a severe attack of pneumonia affecting the right lower lobe, which responded somewhat slowly to treatment with antibiotics. Electrocardiography on Jan. 23, 1951, still showed a Q R S lasting 0·08 sec. (see figure). After her second discharge from hospital she was never fit enough to work again, and died fifteen months later.

DISCUSSION

The relief of hypertension produced at times by the removal of a diseased kidney is familiar, and numerous examples have been reported. In one case the patient is still fit after eight years (Petch 1947). Only too often, however, other hypertensive mechanisms have developed, perhaps in the sounder kidney, and permanent recovery is impossible. Such improvement as takes place is attributed to the removal of a pressor substance secreted by the damaged kidney, and presumably a similar mechanism produced the electrocardiogram described in the present case. The first blood-pressure recordings were made in the presence of severe cardiac failure, and with improvement the pressure rose. It is not known what levels obtained before failure developed. The severity of hypertensive disease in general is often best inferred from its indirect effects rather than by direct measurement, and it seems reasonable to suppose that the disappearance of the abnormality was mediated by a fall in the basal blood-pressure from some previous high level rather than by any direct effect on the conducting tissue.

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CONGENITAL ABSENCE OF THE GALL-BLADDER
WITH STONE IN THE COMMON BILE-DUCT

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CONGENITAL absence of the gall-bladder in man is a rare anomaly. It may occur without any other variation from the normal in the remaining extrabiliary system. The fossa of the gall-bladder is commonly absent, but occasionally a shallow fissure or dimple is visible on the under surface of the right lobe.

This anomaly is twice as common in females as in males. The ages of the patients when the anomaly is discovered, at operation or at necropsy, varies from a few days to 65 years, with an average of about 35 years. Its absence has no effect on the health or digestive functions. When the extrahepatic ducts are dilated, the presence of one or more gall-stones makes it virtually certain that the increased size is due to the obstruction from the calculus, rather than from the absence of the gall-bladder. Gross (1936), who reported 38 cases of total absence of the gall-bladder, said that this anomaly was rarely associated with any compensatory dilation of the hepatic or of the common bile-ducts. Other workers have confirmed this.

Aristotle (384–322 B.C.) did not agree that the gall-bladder gave rise to certain sensations, or that the absence of the gall-bladder gave long life. He said that in some people there was apparently a gall-bladder attached to the liver, whereas in others there was none. He observed that some animals (mule, ass, deer, camel, dolphin, and sea-calf) have no gall-bladder.

Pliny (A.D. 23–79) added the wild boar to Aristotle's list of animals without a gall-bladder. The gall-bladder is also absent in badgers and some species of sharks, but in other species of sharks an intrahepatic gall-bladder has been found. The horse and the rat have no gall-bladder, whereas the cow and the mouse have. Scammon (1911) states that the pigeon is the only bird without a gall-bladder, but its embryo has one.

According to Gross (1936), Stolkind (1939), Muir (1941), and others, the absence of the gall-bladder is a developmental abnormality, whereas Gaultier de Claubry (1829), and Lémery (1701) regard it as a result of inflammation.

Virenque (1923), who made a great number of post-mortem examinations of children and adults, never found a single case of congenital absence of the gall-bladder. Knox (1922) found 2 cases in 2000 necropsies. Mentzer (1929) and Nagel (1926) each found one instance of congenital absence of the gall-bladder in 1600 necropsies. At the London Hospital 9 cases of congenital absence were found in 21,631 necropsies from 1908 to 1939. At the Hospital for Sick Children, Great Ormond Street, 20 of these cases were met in 5395 necropsies on children in 1909–35. Stolkind (1939) published 31 cases of congenital abnormalities of the gall-bladder, of which 11 were absence thereof.

Huber (1749), Vergne (1826), Canton (1847), Rambault and Schachmann (1882), and many others have reported cases of adults who died from other reasons and were found at necropsy to have no gall-bladder.

CASE-RECORD

A multiparous married woman, aged 64, was referred to the surgical clinic at Leigh Infirmary with five months' history of recurring abdominal pain. After her first attack of pain she became jaundiced, and the discoloration persisted for three weeks. There was no previous history of indigestion or flatulence, but she had lost her appetite recently and almost 2 stone in weight.

On examination a barium meal showed no abnormality. A cholecystogram showed no filling of the gall-bladder.

At operation, on June 11, 1952, a small cirrhotic liver was exposed. The common bile-duct was easily identified because it was grossly dilated. No gall-bladder or cystic duct was present, and there was no fossa or fissure on the under surface of the right lobe of the liver. The dilated duct was incised, and a single spherical stone, 0·75 cm. in diameter, was extracted from its lower end. The duct was drained with a T-tube.

After operation a choledochogram on the tenth postoperative day showed no filling defect in the duct. The tube was removed, and the patient discharged from hospital. Since then she has gained weight and has had no recurrence of the pain.

DISCUSSION

The outgrowth from which the liver is formed is a ventral outpouching from the entoderm covering the abdominal aspect of the septum transversum. During the development of the liver bud, the region of the liver in front of the hilum comes into existence as a projection from the ventral aspect of the gland originally embedded in the septum. The future gall-bladder is a short diverticulum, actually embedded in the mesoderm of the septum at its ventral limit. Later, when the gland extends beyond the ventral mesentery, it carries the gall-bladder with it, stretching its stalk in so doing. The fundus of the gall-bladder appears in this mesoderm below the liver. Thus the gall-bladder is formed from the lower part of the hepatic diverticulum.

The absence of the gall-bladder may be explained in two ways:

(1) The hepatic diverticulum arises from the foregut to form the liver, the extrahepatic ducts, and the gall-bladder. The gall-bladder and the cystic ducts normally originate from this diverticulum as an outpocketing, but the failure of the latter development would cause complete absence of the gall-bladder and cystic duct.

(2) Alternatively, the absence might be explained by the failure of the gall-bladder bud to resolve from its solid embryological stage. In early embryonic life the gall-bladder is a hollow structure, but it has its lumen temporarily obliterated during the so-called solid phase through which such structures pass. The lumen is re-established in the normal organ, but an arrest in the obliterated stage would leave a structure invisible to the naked eye.

The literature supports our belief that congenital absence of the gall-bladder causes no alteration in function nor any symptoms. The symptoms that arise if cholangitis supervenes or a stone forms are similar to those of these complications when the extrahepatic system is normal.

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Reviews of Books

Local Analgesia: Abdominal Surgery

R. R. MACINTOSH, D.M., F.R.C.S.E., D.A., Nuffield professor of anæsthetics, University of Oxford; R. BRYCE-SMITH, B.M., D.A., first assistant, Nuffield Department of Anæsthetics, University of Oxford. Edinburgh: E. & S. Livingstone. 1953. Pp. 94. 22*s*. 6*d*.

VERY few teachers have the gift of understanding their pupils' difficulties. Professor Macintosh and his colleagues possess this rare faculty and they are demonstrating it to advantage in their series of books on local analgesia. The latest one makes no bones about explaining with crystal clarity to the surgeon or anæsthetist long past his student days, what is really simple anatomy to the 2nd M.B. student. Local analgesia is essentially a practical art, but seeing Miss M. McLarty's illustrations is the next best thing to being in the operating-theatre. All the classical blocks of the abdominal wall, the abdominal sympathetic system, and the hernia region are clearly and simply described. With such a combination of text and illustrations, the reader is almost assured of success even if he performs local analgesia but rarely.

Understanding Children's Play

RUTH E. HARTLEY, LAWRENCE K. FRANK, ROBERT M. GOLDENSON. London: Routledge & Kegan Paul. 1952. Pp. 372. 21*s*.

THESE authors are concerned to show in detail the contribution made by play to the development of personality and character on the one hand, and of the intellect on the other. They also want to show that, without turning themselves into amateur psychiatrists, teachers can extend their capacity to observe and interpret children's play.

"This understanding is essential if teachers are to have insight and be helpful in what they do—and proof that it can be acquired is shown by the increasing number of teachers who have learnt to think of their function in more understanding ways."

"Teachers have usually accepted expressions of pleasant and happy emotions, but there are other emotions that are equally strong and real. These other emotions have been almost universally banned from the class room . . . but no normal child is completely free of the adjustive devices that are labelled 'problem behaviour.'"

It is asking a great deal of ordinary adults to ask them to accept expressions of unpleasant emotions directed at themselves. If, however, the children can express these in play, the adults can learn to understand what is being expressed and to tolerate what they understand. Play serves many therapeutic and educational functions, and these are examined in detail. The book is valuable in that it sets the reader thinking about ends rather than means and in that it will provoke thought even in those who do not agree with its basic principles. It is addressed to teachers, but all workers with young children, including parents, will find it well worth reading.

Thoracic Surgical Management

J. R. BELCHER, M.S., F.R.C.S., consultant surgeon, London Chest Hospital; I. W. B. GRANT, M.B., M.R.C.P.E., assistant physician, Edinburgh Northern Hospitals. London: Baillière, Tindall, & Cox. 1953. Pp. 196. 16*s*.

MOST modern textbooks on thoracic surgery are concerned with the higher flights of technical achievement, devoting little space to the problems of preparation and after-treatment which play a vital part in this branch of surgery. Mr. Belcher and Dr. Grant set out to give a conscientious and accurate account of methods of investigation and of postoperative treatment and complications, leaving out all reference to operative technique and selection of cases. Theirs is therefore a specialised book, but one which will appeal to the large group of people—from housemen upwards—who are called on to look after patients undergoing thoracic operations. Admittedly, not everyone will agree with all the details, but the experiences of the authors can be taken as representing the basic teaching and practice of the London chest hospitals.

The accounts of bronchial anatomy, bronchography and bronchoscopy, and the technique of pleural aspiration are particularly well done. There is perhaps some unnecessary detail in such lists as those describing apparatus, and on occasions the authors have found it difficult not to go into technical details which, a priori, they wished to avoid. The list of operative complications makes formidable reading; but these events can and do occur, and must be remedied as speedily as possible along the lines the authors suggest.

The line drawings make effective illustrations, with one or two small exceptions. For example, in fig. 33 the drainage tube projects too far beyond the safety-pin, and in another place the operator's hand shows polydactyly.

If the authors have found it difficult to limit the scope of their thesis or to obtain an ideal balance, they can rest assured that they have provided a work which is full of common sense. It is the only book which gives full details and guidance on the management of thoracic surgical cases and indicates the thorny passages along which this branch of surgery has evolved—a feature that is often forgotten by the surgeon who is not continually operating on the chest.

Advances in Internal Medicine

Vol. 5. 1952. Editors: WILLIAM DOCK, M.D., Long Island College of Medicine, Brooklyn; I. SNAPPER, M.D., Mount Sinai Hospital, New York. Chicago: Year Book Publishers. London: Interscience Publishers. 1952. Pp. 464. 80*s*.

THIS fifth volume maintains the standard of its forerunners.

Richard Bing discusses the complicated subject of cardiac catheterisation, A. H. Blakemore reviews portal hypertension and its treatment, and A. B. Gutman gives an interesting account of the derangement of purine metabolism in gout. Two subjects of topical interest are an account by Lyons and Love of the clinical aspects of ganglionic and adrenergic blocking agents and one by M. H. Bass on those diseases of pregnant

women which affect the offspring. Two of the contributions are from non-American authors: J. Mulder, of Leiden, discusses influenza and J. Waldenström, of Lund, the abnormal proteins in multiple myelomatosis. A glance through the five volumes published since 1942 reveals how thoroughly the growing edge of medical knowledge is surveyed in this series. The price, however, is a high one for nine articles.

John Abernethy

A Biography. JOHN L. THORNTON, A.L.A., librarian, St. Bartholomew's Hospital Medical College, London. London: Distributed for the Author by Simpkin Marshall. 1953. Pp. 184. 25*s*.

IT is unfortunately true that Abernethy is remembered for his eccentricities rather than for his sterling qualities, and an assessment of his contributions to surgery is overdue.

His life was covered roughly by the reigns of George III and IV. He first made his reputation by his ability as a teacher and, because his fame spread far and wide, he became the founder of the great medical school attached to St. Bartholomew's Hospital. He was also the founder of the British school of surgery based on physiology rather than anatomy, and he was the first of the great English surgeons of the last century to treat patients by expectant means rather than by operation. These very attributes make him a less colourful and exciting personality than his contemporary Astley Cooper. He has never been described as a brilliant operator, and he had little opportunity to become one, for he was a full surgeon for a few years only. His dread of operating, in the days that knew not anæsthetics, was due to a sensitive nature that abhorred the infliction of pain. His writings have little value today though they were considered vital additions to the literature of his period. Thus it is that the most interesting parts of this biography are those which describe his rudeness to patients, and his quarrel with the Editor of the *Lancet*, who printed his lectures without his permission and in the embarrassingly exact words that he used. His finer qualities were admired by his successors who reaped the benefit of his teaching and later appreciated the full significance of his work for surgery.

Statistical Method in Biological Assay

D. J. FINNEY, M.A., SC.D., lecturer in the design and analysis of scientific experiment, University of Oxford. London: Charles Griffin. 1952. Pp. 661. 68*s*.

AS bacteriology and pharmacology become increasingly sophisticated, there is a growing need for a rigorous statistical approach to the quantitative assessment of, for example, bacterial count or drug strength. From the central themes of the analysis of variance and experimental design has developed the technique known as bio-assay, at a speed which has called forth this companion volume to Dr. Finney's *Probit Analysis* which was published last year. Some overlap between the two is inevitable, but the suggestion of duplication is more apparent than real.

This volume gives a more general account of the relevance of different experimental designs to particular problems in the interpretation of quantal responses in potency estimation, and discusses the merits and limitations of the rapid analytical methods proposed by various authors. Enough of the mathematical background is given for the book to be an intelligible introduction for someone who is statistician rather than biologist, but the sections are so arranged that a laboratory worker, prepared to take a certain amount on trust, can extract the experimental plan and computational procedure which he needs for a specific problem. To do that intelligently, however, he would need some background knowledge of statistical method and would be well advised to read through the chapters on the general arguments involved.

Methods in Medical Research

Vol. 5. Editor: A. C. CORCORAN, M.D., assistant director, Research Division, Cleveland Clinic Foundation, Cleveland. Chicago: Year Book Publishers. London: Interscience Publishers. 1952. Pp. 394. 57*s*.

LIKE the previous volumes in the series, this book consists of short monographs on research methods in a small number of broad fields. The emphasis is on technical detail, but naturally varies from one contribution to another; and applications of the methods described are given.

The fields covered in this volume are methods for separation of complex mixtures of higher molecular weight substances, methods of renal study, and immunochemical methods for determining homogeneity of proteins and polysaccharides. The first section contains useful monographs on chromatography, electrophoresis, and ultracentrifugation. The methods of renal study range from bio-assay of antidiuretic substances through clearance techniques to the production and measurement of experimental hypertension. There are 26 monographs in this section, and the main trends of renal research are well represented on the level of methodology. The third section, edited by Melvin Cohn, consists of three detailed monographs on the production, separation, and assay of antibodies.

This volume should fulfil the hopes of its editor by finding its place "in laboratories rather than in libraries." The monographs are authoritative and clearly written, for the most part, and the value of many of them is enhanced by editorial comment at the end.

Practical Management of Pain in Labour

W. D. WYLIE, M.B. Camb., M.R.C.P., D.A., anæsthetist, St. Thomas's Hospital, London. London: Lloyd-Luke Medical Books. 1953. Pp. 148. 18*s*. 6*d*.

THERE can be few anæsthetists who can write about anæsthesia in labour with the confidence and understanding which Dr. Wylie shows here. He has produced what must be one of the best practical books on the subject available today. He not only deals with the practical difficulties encountered and the apparatus used for analgesia and anæsthesia in normal and abnormal labour but also gives just enough about the anatomical and pharmacological parts of the subject to assist the reader in using the techniques intelligently. A short list of helpful references is included at the end of each chapter, so that if the text is insufficient the reader can refer to original papers for detailed descriptions of the various methods. The last two chapters are devoted to local anæsthesia and to therapeutic blocks for conditions such as venous thrombosis. Caudal anæsthesia is dealt with adequately, but perineal and vulval blocks and local infiltration for cæsarean section are described more briefly, for these techniques are more within the province of the surgeon than of the anæsthetist. All the illustrations are clear and useful, and the pictures of apparatus are grouped together in the middle of the book. Every doctor who looks after women in childbirth will find this book of value.

Biochemistry in Relation to Medicine (2nd ed. London: Longmans, Green. 1953. Pp. 524. 30*s*.).—It is not long since we welcomed the first edition of this excellent elementary text for medical students by Dr. C. W. Carter and Prof. R. H. S. Thompson. The new edition is as lucid as the old, and it contains new chapters on the metabolism of lipids and proteins; and the accounts of carbohydrate metabolism, sterols and steroid hormones, plasma-proteins, electrolytes, vitamins, hæmoglobin, and acid-base equilibrium have been largely rewritten. The approach is simple and essentially empirical, while the inclusion of exercises and methods for the estimation of important chemical substances (some not commonly included in elementary books) ensures that the more strictly chemical aspects of the subject receive their fair share of attention. The number of references has more than doubled and now exceeds 1200; and the price of the book has increased only in proportion to its size.

Poliomyelitis: *Papers and Discussions presented at the Second International Poliomyelitis Conference* (London: J. B. Lippincott. 1952. Pp. 555. 60*s*.).—In September, 1951, we published a short report of the second International Conference on Poliomyelitis, held that month in Copenhagen. This volume presents, with every grace which fine type and paper, and skilful blockmaking, can supply, a full account of the occasion. In his preface, Dr. Morris Fishbein, chairman of the committee on publications, notes that the proceedings of the first conference, held in 1948, have been widely circulated, and are to be found in most of the medical libraries of the world. This handsome volume will take its place beside them as a permanent record of the stage our knowledge had reached when the speakers met.

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LONDON: SATURDAY, MARCH 28, 1953

Combined Prophylactics

SUCCESSFUL protection from the cradle to the grave against infectious diseases, once a pipe-dream of the immunologist, is rapidly becoming feasible. In a single decade immunisation has eliminated diphtheria as a major cause of death and disease among children; and clinical trials are proceeding now to discover the best form of vaccine for the prophylaxis of another scourge of young children—whooping-cough. Likewise B.C.G. vaccination will, we hope, lessen the incidence of tuberculosis. During the late war many Servicemen were immunised against tetanus, typhoid, paratyphoid A, B, and C, cholera, and yellow fever. The list of successful prophylactics is growing, but if each is to be given in a separate immunisation course childhood will be punctuated with needle-pricks. As an alternative to turning children into pin-cushions there is the blunderbuss method by which the syringe is loaded with a mixture of immunising agents in the hope that a single shot will be effective against all diseases. The advantages of using a combined antigen are not confined to the person receiving the injection. Both the doctor who has to give the inoculations and the administrator who has to plan the immunisation campaign, make the arrangements, and record individual immunisation histories will appreciate any relief that can be afforded them.

It is necessary, therefore, to inquire into the efficacy of multiple prophylactics. The first question is whether some constituents of a combined antigenic mixture interfere with the immunising effects of others, or whether the presence of other antigens stimulates antibody production. Some of the first answers to this question were very encouraging. RAMON [1] concluded that the addition of typhoid-paratyphoid vaccine to tetanus toxoid enhanced the tetanus immunity, and this finding was confirmed by MACLEAN and HOLT.[2] Similarly, synergistic effects have been noted with various mixtures of diphtheria, tetanus, and staphylococcal toxoids, and typhoid and pertussis vaccines; each antigen was found to be more effective in combination than alone. HEKTOEN and BOOR [3] used a mixture of 35 different antigens and observed the formation of precipitin against almost all of them. The enhancement of antigenicity by the addition of other antigens may be due to various factors. Adjuvants such as alum increase the immunising potency of diphtheria toxoid [4] either by entraining the antigen and preventing its rapid elimination or by stimulating antibody-forming elements of the body. In recent years the influence of hormones on antibody production and sensitisation has been recognised, and some of the non-specific effects of antigens on antibody production may be traced to pituitary adrenocortical stimulation.

Unfortunately, however, the use of multiple antigen mixtures has its pitfalls, and the evidence is not fully in its favour. One of the important points in immunisation is the avoidance of side-reactions, and it seems possible that toxic reactions are commoner with combined prophylactics; the combined subliminal reactions of some immunising agents might be expected to add up to appreciable effects in some people. Little is yet known on this point, and it is important to gather further evidence. A further disadvantage of combined prophylactics that needs further exploration is the possibility that the presence of some antigens may interfere with the immunising effects of others. There must obviously be a limit to the antibody-forming capacity of the body, and one potent antigen may swamp the effects of relatively feeble antigens in the same mixture. In a combined diphtheria/scarlet-fever prophylactic excess of scarlet-fever toxin interfered with the development of diphtheria immunity,[5] and the responses to a combined diphtheria-tetanus prophylactic were found to be lower than to the two prophylactics administered separately.[6] With a combined diphtheria-tetanus-pertussis-typhoid preparation development of diphtheria immunity was unsatisfactory.[7] Thus the components of a combined prophylactic need to be chosen with care, and both the quality of the components and the relative amounts of each are important. Some of the factors involved have been examined by BARR and LLEWELLYN-JONES [8] in work with guineapigs immunised with a mixed diphtheria-tetanus prophylactic and with a combined tetanus-typhoid-paratyphoid prophylactic. These workers emphasise that it is important not only to select carefully a suitable batch of each component for incorporation into a combined prophylactic and to blend appropriate amounts of each, but also to match the composition of the blend to the previous immunisation history of the population to be treated. If an individual already has an established primary immunity to one component of the combined prophylactic, the immune response to the secondary stimulus may be so overwhelming that the effects of other antigens will be swamped. A blend of prophylactics suitable for some members of the population may prove unbalanced for others who are already partly immune. For mass-immunisation it is obviously impossible to determine the probable immune response of each individual to each antigen and to prescribe for each an appropriate blend of prophylactics. Yet the premature use of inappropriate blends is likely to result in inadequate immunity and the subsequent discrediting of immunisation in general.

Various mixtures of toxoids and vaccines are already on the market, and some guidance in their

1. Ramon, G. *Rev. Immunol.* 1936, **2**, 415.
2. Maclean, I. H., Holt, L. B. *Lancet*, 1940, ii, 581.
3. Hektoen, L., Boor, A. K. *J. infect. Dis.* 1931, **48**, 588.
4. Glenny, A. T., Pope, C. G., Waddington, H., Wallace, U. *J. Path. Bact.* 1926, **29**, 31.
5. Glenny, A. T., Waddington, H. *Ibid*, 1928, **31**, 403.
6. Scheibel, I. F. *Acta. path. microbiol. scand.* 1944, **21**, 130.
7. Peterson, J. C., Christie, A. *Amer. J. Dis. Child.* 1951, **81**, 483.
8. Barr, M., Llewellyn-Jones, M. *Brit. J. exp. Path.* 1953, **34**, 12.

selection is desirable. The new *British Pharmacopœia* provides a reminder that the proportions of the components of mixed vaccines such as T.A.B.C. (typhoid and the three paratyphoid groups A, B, and C) are already officially defined. In the past the criteria considered in determining the composition of mixed vaccines were the relative severity of the various diseases concerned and the frequency with which they occurred. It is now evident that with a mixed prophylactic other factors, such as the comparative immunising potency of the constituents and the immune state of the population, should be considered. The practitioner will need guidance on the choice of a suitable mixture of prophylactics; and the conclusion seems inescapable that an expert committee should tackle the difficult task of advising on the composition of approved combined prophylactics. Perhaps the biological products committee of the British Pharmacopœia Commission is the appropriate body, since it already defines the composition of official biological preparations. In any event information from all sources should be collated in order to prevent further unsuitable mixtures being brought into general use.

Exit Extrapleural Pneumothorax?

In pulmonary tuberculosis the results of treatment cannot be assessed quickly. Even with a definitive procedure such as thoracoplasty or resection, several years must pass before a balanced estimate can be made. With such operations as intrapleural or extrapleural pneumothorax, the success of which depends not only on the initial operation but on maintaining pulmonary collapse by repeated air refills, the time required is yet longer. The well-being of many patients while the lung is kept collapsed is very pleasing, but this limited success does not necessarily betoken final victory. With both methods the collapse obtained is, as a rule, temporary; and sooner or later either the lung must be allowed to re-expand or some further step must be taken to secure its permanent collapse.

Patients treated by extrapleural pneumothorax often have to submit to subsequent thoraco-plasty. In some centres [1] efforts have been made to avoid such a sequence by resorting to oleothorax; but this operation has not become generally popular, principally because of the fear of late fistula formation. Nor has the introduction of plastic materials directly into the extrapleural space [2] proved a satisfactory alternative. Apart from the long-term problems, extrapleural pneumothorax has caused much concern on account of the high incidence of postoperative complications; even with skilled surgery, hæmorrhage and tuberculous infection of the space have been disturbingly common. Attempts to prevent or minimise the consequences of severe bleeding into the space have had some success,[3-5] and chemotherapy has helped to counter both tuberculous and non-tuberculous infection; but even so the method clearly has only a limited value, and most surgeons have concluded that thoracoplasty gives a much more satisfactory result and that extrapleural pneumothorax should be undertaken only when thoracoplasty is contra-indicated. This has led to the employment of extrapleural pneumothorax in two quite different types of case where intrapleural pneumothorax has failed: first, where deformity is especially undesirable, as in the growing adolescent; and, secondly, in the patient with bilateral disease where major surgery is either required or has already been done on the other side. It seemed that here extrapleural pneumothorax, because it preserves the integrity of the chest wall and thus causes little impairment of respiratory function, really had a sure place in treatment; but since the introduction of subcostal, extraperiosteal plombage the question has been whether it should have any place at all.

Strieder and Gaensler,[6] of Boston, suggest that extrapleural pneumothorax is the procedure of choice only for "patients with pulmonary insufficiency due to previous collapse or resection on the opposite side and for patients for whom surgical treatment of the other lung is anticipated in the near future." The Boston workers divide their series of 47 cases from the point of view of indications into two groups; but unfortunately they do not specify clearly the relative incidence in these two groups of complications and poor results. Baldry et al.[7] have shown that this information is essential for assessing the value of the operation, since fibrosis or otherwise unsuitable disease greatly increases the incidence of serious complications and diminishes the chance of a satisfactory result. Nor is it manifest why Strieder and Gaensler chose extrapleural pneumothorax rather than extraperiosteal plombage. Plombage might seem the happier choice for several reasons, including the slighter risk of hæmorrhage, easier postoperative management, and more permanent control of the disease; and the limitations of plombage regarding fibrotic lesions and unsuitable cavities apply at least equally to extrapleural pneumothorax. As regards effect on respiratory function, it seems unlikely that extrapleural pneumothorax can claim any significant superiority. Its one possible advantage is its very impermanence; but this is contingent on overcoming all the hazards and on maintaining satisfactory healing after re-expansion—a tenuous basis on which to retain it as a modern therapeutic weapon.

Extrapleural pneumothorax is still commonly practised on the Continent [8]; but in this country it is rapidly being replaced by subcostal, extraperiosteal plombage, the immediate results of which are more reassuring, and which also offers better hope of permanent control of the lesion. Laird and Stephens,[9] for example, have abandoned extrapleural pneumothorax in favour of the 'Polystan' sponge operation. Plombage, it is true, has its own problems as regards indications, technique, postoperative management, and complications; and the long-term results are still awaited with some trepidation. Nevertheless confidence in it is increasing so rapidly among both doctors and patients that it is invading the field not only of extrapleural pneumothorax but also of the standard thoracoplasty and, less firmly, of ordinary intrapleural pneumothorax.

1. Alarçon, D. G. Surgical Extrapleural Pneumothorax. Mexico, 1948.
2. Wilson, D. A. *J. thorac. Surg.* 1948, **17**, 11.
3. Mullard, K. S. *Thorax*, 1948, **3**, 233.
4. Barlow, D. *Tubercle*, 1951, **32**, 186.
5. Gaensler, E. A., Strieder, J. W. *Amer. Rev. Tuberc.* 1951, **63**, 547.
6. Strieder, J. W., Gaensler, E. A. *Ibid*, 1953, **67**, 3.
7. Baldry, P. E., Sumner, J. J., Ward, R. L. *Tubercle*, 1952, **33**, 336.
8. Murstad, E. *Lancet*, 1951, **i**, 299.
9. Laird, R., Stephens, T. W. *Tubercle*, 1953, **34**, 68.

Communication

EXPLODING any naïve belief that in science we use precise terms, Prof. J. Z. YOUNG this week reminds us that, on the contrary, our language is largely that of analogy. The difficulty of the scientist in describing his material is, in fact, exactly the difficulty of the poet and the mystic—the necessity of finding which words, and in what order, will best convey to another person some even remotely accurate idea of what he is talking about. The poet, being born with some facility—which he can improve by practice—for arranging these counters, has perhaps the least exacting problem of the three. He proceeds, as the scientist does, by the method of analogy and comparison, using verbal images to rouse in other minds echoes of the emotion he feels in his own. The mystic, with no vocabulary whatever to express his experiences, encounters the greatest difficulty of the three. If he attempts exact description he is driven either to the spineless " ineffable " or to such humdrum mineral images as gold, jasper, and sardonyx. For him, too, the only profitable means of communication is the language of analogy and symbol. The scientist, though he can mint new counters as he needs them, has his own peculiar problem: once he has described his objects he has to measure them; and the terms and analogies he uses, as Professor YOUNG points out, will decide what objects he measures. If he is not inventive enough, not rich enough in rewarding analogies, he may hinder the development of his study and cut it off from allied lines of research.

Professor YOUNG is particularly concerned with the lack of a common language between neuro-anatomy and psychology. For though he favours an abundance of new analogies, from which new hypotheses might spring, he nevertheless thinks the current analogies used in speaking about the nervous system are too numerous and varied. The neurologist has equipped himself well with words to describe the functions of nerve-fibres and nerve-cells, but cannot find words to say all he would about the activities of the brain. Meanwhile psychologists have a totally different set of terms to describe events in human consciousness, and find they have little need to use or refer to neurological terms. Some psychologists talk of the more elaborate aspects of human behaviour in terms of entities such as the " id " and the " super-ego "; and these, Professor YOUNG admits, at least provide more complete descriptions than anything the neurologist can offer at present. What we need, he feels, is a common language in which both neurologists and psychologists can express their concepts—some set of terms which compares the brain with something more complicated than any simple machine, and which offers means of describing the memory system. This general language, he suggests, might put all the descriptions of the nervous system—structural, chemical, electrical, psychological—into their place as part of a system for talking about the whole human being. He believes it could be done, and that unless we do it our age may come to be regarded as concerned only with trivia.

That such a synthesis is needed, and ultimately inevitable, no-one will doubt; yet it may be that at present it is beyond us. The nature of the material we are examining may prevent us, for the moment, from describing it in any common set of terms. Physicists find that light behaves in some respect like waves and in some respects like particles, and they have to put up with this peculiarity of light and adapt their language accordingly. Neurologists and psychologists who are unable to find a common language can at least behave like good citizens of the world and acquire each other's. Some have already done so, learning, in the process, something of each other's methods and achievements, and finding approaches to their joint study in which they can collaborate. From such combined endeavour may be expected to grow new terms, new analogies, new hypotheses and experiments, and, finally, a common language; and the two disciplines would be in harmony for the theme to which Professor YOUNG invites us all—the study of the balance by which human life is maintained, and all the factors that influence it.

Annotations

THE FATE OF THE AMPUTEE

IN 1950 the director-general of medical services, Ministry of Pensions, set up, under the chairmanship of Sir Ernest Rock Carling, an advisory committee[1] to consider whether limb amputation and the subsequent wearing of a prosthesis could initiate or aggravate cardiovascular disorder, and whether mortality-rates were higher in amputees than in equivalent non-amputated persons. A somewhat inconclusive interim report, based on a statistical study of amputee pensioners from the first world war, was published in 1951, and revealed in those still living no abnormal incidence of cardiovascular disease but a slight elevation of mean blood-pressure. Amputation, in itself, did not appear to influence mortality-rates during the period 1930–50, but the rate was higher in pensioners who had suffered severe wounding, whether accompanied by amputation or not. However, a more detailed study of certificates of deaths in 1945–49 did suggest—though not to the point of statistical significance—that patients with leg amputations died earlier, and more commonly from cardiovascular disease, than comparable pensioners with leg wounds not requiring amputation.

The final report now being laid before Parliament describes further investigations, which have shown that thigh amputees and double leg amputees have a reduced expectation of life compared with normals or men with single below-knee amputations; and also that, within the average figures for amputees as a whole, expectation of life was particularly lessened for those who had suffered serious prolonged sepsis after wounding. In this class of case also there was a greater than normal probability that certain cardiovascular disorders would be certified as the underlying cause of death; and, unexpectedly, when cases of fractured femur and other leg wounds which had not led to amputation were analysed on the basis of whether major sepsis had occurred or not, it was found that this complication was again associated with a higher late incidence of cardiovascular disease and an earlier average age of death.

The factors involved are complex and difficult to separate. Possibly the overweight and sedentary living consequent on limb amputation predispose to cardiovascular disorder; and the committee, recognising that the strain of carrying an artificial leg may become an increasing physiological burden with advancing years,

1. Since the interim report appeared in April, 1951, the members of the committee have been: Sir ERNEST ROCK CARLING, F.R.C.S., Dr. A. GREIG ANDERSON, F.R.C.P., Prof. G. R. CAMERON, F.R.C.P., F.R.S., Dr. T. F. COTTON, Prof. J. L. D'SILVA, M.R.C.P., Prof. K. J. FRANKLIN, F.R.C.P., Dr. A. HOPE GOSSE, Dr. W. E. LLOYD, Dr. W. P. D. LOGAN, the late Mr. P. H. MITCHINER, F.R.C.S., and Dr. E. LIVINGSTONE (secretary).

cautiously suggest the possible need for reassessing some of these pensioners in later life:

"An important effect of our further studies is to suggest that amongst amputees and other classes of wounded there are some individuals who with the lapse of time reach a stage deserving of reconsideration. In any such reconsideration careful discrimination would be needed, as our conclusions are based on average tendencies and do not necessarily apply to any particular individual."

Of immediate relevance are some studies, by Dr. Verne T. Inman and his colleagues [2] in San Francisco, of the energy expended in displacing the centre of gravity of the body through space. While the below-knee amputee is relatively normal from this point of view, the thigh amputee has to expend some 27% more energy for the same physical performance. Such a man, in effect, walks 5 yards to a normal man's 4.

An interesting point that emerges from the analysis is that major sepsis was also associated with a reduced liability to subsequent death from cancer, even allowing for the effect of an earlier average age of death on the incidence of malignant disease. This obviously calls for further study.

Dr. A. Hope Gosse, in a minority report supported by Dr. W. E. Lloyd, denies that the evidence shows that the strain of wearing an artificial limb for thirty years increases the risk either of cardiovascular disease or of earlier death, and doubts whether one and the same statistical survey can show any true relation between previous sepsis on the one hand and cardiovascular or malignant disease on the other. And he takes the robust common-sense view—on a matter in which his opinion carries great weight—that there is no reason why life assurance should not be offered to these patients and to amputees in general at normal or near-normal rates.

For the present, therefore, the matter cannot be regarded as entirely decided. Further investigation is called for by the committee, whose work is one more instance of the interesting and sometimes unexpected findings that may emerge from the statistical analysis of large numbers of detailed case-records.

INCREASES IN MATERNITY BENEFITS

THE changes in maternity benefits set out in the National Insurance Bill, presented to Parliament on March 17, give effect to the recommendations made a year ago by an advisory committee.[3] One of the most important principles which the committee urged was that the woman who wished to have her baby at home should not lose by this decision, and the Bill introduces a new home confinement grant of £3 which will do something to meet the extra expenses which a domiciliary birth always entails. The grant will be paid to mothers who are confined at their own expense and who do not occupy an N.H.S. hospital bed.

The Bill continues to offer different benefits to meet the differing needs of the housewife and the employed woman. The first is the larger group, for six out of every seven who claim maternity benefits are housewives. At present they receive a grant of £4 and a weekly attendance allowance of £1 a week for four weeks after the birth. In future they will receive a lump grant of £9 (plus the £3 home confinement grant when appropriate), and this sum will be paid before or after the birth as the mother chooses.

For the employed woman the changes are even more advantageous. The advisory committee thought that maternity benefits, like sickness or employment benefits, should be payable only to women who chose to pay their own contributions; and that an employed married woman should no longer be eligible by right of her husband's contribution. The committee hoped that the money saved in this way would go to enlarge the grant made to contributors. The Bill gives effect to this restriction of claims, but safeguards for a transitional period the rights of women who have not yet had time to qualify. The basic grant which an employed woman receives is increased from £4 to £9 (£12 if the confinement is at home). It also provides that her maternity allowance, now 36*s*. a week, will in future be paid at the standard benefit rate, which at present stands at 32*s*. 6*d*. a week. She will receive this allowance for eighteen weeks (instead of thirteen) and it will start eleven weeks before the expected date of her confinement (instead of six weeks). This allowance may be increased when the mother has dependents. The effect of these changes will be that a woman who is doing paid work will receive £38 5*s*. (or £41 5*s*. if her confinement takes place at home) instead of £27 8*s*. as at present.

Minor changes in the number of qualifying contributions are also designed to bring maternity benefit into line with sickness and unemployment benefits. But here, too, the woman who wishes to give up work earlier is offered help, for she may complete her qualifying contributions by paying the last thirteen at the non-employed reduced rates.

A LONG-ACTING LOCAL ANÆSTHETIC

IN the treatment of pain, analgesics only stop a gap until the cause is disposed of; and the so-called "local anæsthetics" may perhaps be regarded in the same way. With a duration of activity normally measured in hours, they allow ample time for various surgical manœuvres, and their effect may be prolonged, if need be, by giving with them vasoconstrictor drugs which delay dispersion from the site of injection. A new preparation, 'Efocaine,' has now been devised, however, in which the span of local anæsthetic action has been considerably extended. First developed in the United States,[1 2] it is a solution of 1% procaine base, 0·25% procaine hydrochloride, and 5% butyl-*p*-aminobenzoate at a critical level of saturation in propylene glycol, polyethylene glycol, and water. It will remain stable at room-temperatures for more than three months. Even after repeated intramuscular injections, the solvents used have produced no apparent local damage or systemic toxic effects.

Dilution of this preparation with body-fluids at once brings about deposition of the aqueous insoluble anæsthetic base. When this occurs after intramuscular injection an in-vivo microcrystalline depot is formed. Absorption then takes place slowly and anæsthesia may be prolonged for days or even weeks. In fact, the solution has the advantages of an insoluble suspension without the disadvantages in manipulating a suspension with syringe and needle. It is claimed, but not completely confirmed, that injection of efocaine produces no local pain. In the dosage recommended, only the medium and small nerve-fibres, with comparatively thin myelin sheaths, are blocked; thus pain and tactile sensibility are lost without interference with motor innervation. Permanent nerve damage has never been detected.

Acknowledging its efficacy and relative safety, what is the place in clinical practice for this remarkably long-acting local anæsthetic? It is perhaps most useful for the relief of postoperative pain. When the anæsthetic was given to 54 patients after a variety of operations, the results were "unsatisfactory" in only 3 cases.[1] No examples of systemic toxicity or local tissue reaction were encountered. The doses given did not exceed 15 ml. Roualle [3] reported good results after operation in 8 out of 14 patients, and in another 3 the results were fair. He considered that an accurate nerve block was more effective than local infiltration, because it was important to achieve adequate concentration in close proximity to the nerves supplying the area. He suggested that the

2. See *Lancet*, 1952, ii, 80.
3. *Ibid*, i, 201.

1. Ansbro, F. P., Iason, A. H., Shaftel, H. E., Halpern, A., Latteri, F. S., Bodell, B. *Anesthesiology*, 1952, **13**, 306.
2. 'Efocaine' is now manufactured in this country by Messrs. Crookes Laboratories Ltd.
3. Roualle, H. L. M. *Brit. med. J.* 1952, ii, 1293.

method might reduce the number of complications due to inhibition of the cough reflex and retention of urine, but his series was too small for any conclusions to be reached on this point.

Leriche [4] said that the idea of pain having a protective quality "is an extraordinary error . . . which has no shadow of justification"; and if this is so there are neither moral nor clinical objections to the complete relief of pain. On the other hand, postoperative pain, or, more especially, changes in the postoperative pain in the incision, are signals on the patient's road to recovery, upon which the surgeon and the houseman have come to rely. Clearly the utmost relief should be assured, provided the patient's ultimate welfare is in no way jeopardised. Although the anæsthetising of an incision does not interfere with pain sensation from distended viscera, the removal of pain entirely and for a considerable period may allow complications to develop in sinister silence. Indeed, before any long-acting local anæsthetic can be widely and confidently used for postoperative pain it may be necessary to modify the standards by which postoperative progress is normally judged. Moreover, only further experience will show whether tissue healing does in fact proceed unhindered in the presence of these deposits of drugs—a point that is of particular importance after anorectal operations.

STRUCTURE OF STREPTOCOCCI

IN 1948 Maxted [5] demonstrated that culture filtrates of a strain of *Streptomyces albus* lysed β-hæmolytic streptococci. The group-specific C carbohydrate was liberated undamaged by this process, which is now widely used in preparing streptococci for serological grouping. More recently McCarty [6] has investigated the formation and mode of action of the enzymes produced by *Streptomyces albus*, and has used these substances to investigate the structure of the cell-wall of group-A streptococci.

Filtrates of *Streptomyces albus* are strongly proteolytic. Known proteolytic enzymes such as trypsin and pepsin, however, do not disrupt streptococcal cells; this process seems to depend on some other enzyme in the filtrate. McCarty has shown that the formation of this enzyme coincides with sporulation of the fungus; and he has separated it from the proteolytic component by chemical fractionation. Complete clearing of a streptococcal suspension apparently requires both components. The "disruptive enzyme" alone causes only partial lysis; the cells become gram-negative and have an indistinct outline. Lysis is completed by the addition of the proteolytic component or any other non-specific protease. This resembles the effect of lysozyme, which renders many gram-positive organisms susceptible to lysis by trypsin.[3]

McCarty [4] has also investigated the structure of group-A streptococci as revealed by the action of streptomyces enzymes. By means of a mill containing stainless-steel balls, he prepared a suspension of ground-up streptococcal cells. This suspension was treated with trypsin, chymotrypsin, and ribonuclease, and was then repeatedly washed; and electron microscopy showed that the residue comprised only the cell-walls of the cocci. These cell-walls were highly resistant to the action of such enzymes as trypsin, pepsin, papain, and lysozyme and were unaffected by various organic solvents. The "disruptive enzyme" of *Streptomyces albus*, however, caused almost complete solution of the material, suggesting that it acts on intact cells by dissolving the cell-wall with resultant release of cellular materials into solution. Chemical analysis of the cell-wall preparation showed that much of it consisted of carbohydrate, which was identified serologically as the group-specific C carbohydrate of group-A streptococci. The streptomyces enzyme seems to act on this carbohydrate, which, McCarty concludes, makes an important contribution to the structural integrity of the cell-wall. This conclusion is not original, but the work is important since it illustrates the use of a relatively new technique to investigate bacterial structure.

4. Leriche, R. The Surgery of Pain. English translation by A. Young. London, 1939.
5. Maxted, W. R. *Lancet*, 1948, ii, 255.
6. McCarty, M. *J. exp. Med.* 1952, **96**, 555.
7. Webb, M. *J. gen. Microbiol.* 1948, **2**, 260.
8. McCarty, M. *J. exp. Med.* 1952, **96**, 569.

HOSPITAL COSTING

THE Hospital Costing Returns for 1951–52 have now been issued by the Ministry of Health.[1] When the first of these returns was published last year, we remarked on the inadequacy of the existing method of compiling the figures.[2] The deficiencies are recognised by the Ministry itself; and the reports by the Nuffield Provincial Hospitals Trust and the King Edward's Hospital Fund [3] originated in the Minister's desire to improve the usefulness of the costing analysis.

Hitherto the emphasis has been mainly on the production of figures for inter-hospital comparisons, in order to expose local extravagance. It is generally agreed, however, that there is no large-scale extravagance to be exposed, but only different degrees of housekeeping efficiency; and the costing returns so far published show the difficulty of drawing useful conclusions about moderate differences in the cost per patient per week. Costing analyses should surely relate cost to the adequacy or quality of the services provided. Otherwise a hospital which fails to provide various desirable services, or provides service of poor standard, may nevertheless earn full marks for economy when its figures are taken at their face value. A complete unit costing system may overcome this difficulty. On the other hand, such an approach may lead to over-complication: the figures which are of most use, to laymen and executive officers alike, are the simplest figures—the figures behind which lies little calculation and "treatment." One of the major items of expenditure is salaries and wages; because salaries are determined on a national basis, there is no point in elaborating the data. The most useful index to the adequacy of staff in any department is not financial: it is a statement of the number of people of different grades who are employed, related to equally simple numbers of patients, or tests, or examinations, or items of service.

There is a danger that the elaborate methods of costing that have served industry well will be too readily retained in the wholly different context of the hospital service. The need is to re-examine each type of costing return with a view to simplification and the abandonment of those for which the cost of ascertainment is not balanced by enough useful information. The hospitals have still to forge their own measuring-rods.

STAGES OF ANÆSTHESIA

MANY anæsthetists learned the basic principles of their specialty with ether as the sole anæsthetic agent and the signs of Guedel's stages as their guide. Today, however, ether has been very largely replaced by other agents; and with none of these are Guedel's stages clear-cut. Laycock [4] rightly remarks that the 2nd stage, of excitement, which he terms "unconsciousness with reflex activity," should now hardly ever be seen. Similarly, the reflex depression of the 3rd, or "surgical anæsthesia," stage (termed by Laycock "unconsciousness with reflex depression") is commonly replaced by deliberate reflex inhibition through neuromuscular paralysis. Nowadays separate drugs are given for motor paralysis and for unconsciousness. Thus *d*-tubocurarine,

1. Hospital Costing Returns: Year ended March 31, 1952. H.M. Stationery Office. Pp. 123. 10*s*.
2. See *Lancet*, 1952, i, 1243.
3. *Ibid*, ii, 1067.
4. Laycock, J. D. *Anæsthesia*, 1953, **8**, 15.

gallamine, or decamethonium iodide may be administered to inhibit reflex activity, or pentamethonium iodide or hexamethonium iodide as a ganglion paralysant, together with, say, thiopentone to bring about unconsciousness. With the components of anæsthesia divided in this way, no single series of stages can give a reliable guide. Indeed, the balance is not always smooth. In a fully curarised patient the "anæsthetic" drug may be reduced so much that pain stimuli reach the higher centres of the brain and cause reflex vasomotor disturbance, which are not inhibited by a neuromuscular paralysant. This may lead to blood-pressure changes, sweating, and circulatory disturbances; while the nightmare return of consciousness with the operation still in progress has occasionally been reported.

No knowledge of the stages of anæsthesia will avert such mistakes. Yet, presumably because it illustrates these different stages, ether is still commonly used for teaching. Only a sound knowledge of the capabilities and limitations of each of the modern drugs will enable the administrator to choose wisely and to anæsthetise skilfully. The actual administration calls only for venepuncture; but the subsequent care of the patient, in whom unconsciousness and reflex inhibition are achieved almost immediately, requires perhaps even more skill than does the continued administration of an anæsthetic by inhalation. It would seem prudent to concentrate on teaching the sound use of intravenous anæsthetics with special emphasis on the care of the unconscious patient, in whom vital reflexes have been obtunded or inhibited.

THE SECOND WORLD FOOD SURVEY

As soon as F.A.O. was established by the United Nations it set about the task of assembling all the information in the world about agricultural production, and comparing this, country by country, with the food requirements of the people judged according to physiological standards. The World Food Survey published in 1946, showed how much the war had disrupted agriculture and gave quantitative assessments of the gap, in many countries, between food needs and food-supplies. Six years later these balances have again been drawn up and are set out in the Second World Food Survey.[1] This gives no ground for satisfaction or complacency, but is rather a challenge to activity. World food production has indeed expanded since the war, but much of this achievement is merely a recovery from war-time devastation, and it is insufficient to meet the increasing demands of growing populations. The number who are underfed increase. Before the war 38·6% of the total population of the world lived in countries which did not receive sufficient food to allow a daily distribution of 2200 calories per head. Now this proportion has risen to 59·5%. This majority of human kind also receives less than 15 g. of animal protein per head. There is no doubt that at least three-fifths of the world do not get enough food to supply the physiological minima for health.

On the bright side the report points out that "in the last few years consciousness that the world is one has grown space. There is increasing realisation that the better-off countries must assist the comparatively poorer nations, not merely from humanitarian motives, but also to safeguard their own living standards." Most men of sense and good will now realise the urgent need for developing agricultural resources in all countries, but most especially in the tropics: further, it is widely appreciated that this can only be done by some temporary sacrifices by the better-off. The problems are essentially technical. Here the report gives a few pointers. It is optimistic about the possibilities of great increases in crop yields. Rice yields, in particular, could rise 15–20% if the gap between modern scientific knowledge and primitive agricultural practices could be narrowed.

The report is cautious about the possibilities of expanding crop areas. There have been impressive successes in bringing new land under the plough, but such schemes need immense capital investment. Finance must often be a major limiting factor. There is a wide scope for spreading modern techniques in animal husbandry and in fishing. The enormous amount of food waste is also pointed out. Rats alone are said to eat 7 million metric tons of human food each year in the U.S.A., and insects perhaps double this amount. Then again, farmers need to be offered proper incentives; but so far few countries have overcome the difficulty of encouraging the farmer to produce by paying him high prices, and at the same time protecting the consumer in the towns.

Although the survey presents a thoroughly disturbing picture of the world food-supply today, there are signs that the future may be brighter—what is being done in overcrowded Hong-Kong and Israel[2] shows that man has not lost his ingenuity.

1. Second World Food Survey. Food and Agriculture Organisation of the United Nations. Rome, 1952. Pp. 59. Obtainable from H.M. Stationery Office. 2*s*. 6*d*.

ABO BLOOD-GROUPS AND FERTILITY

RARELY a number of alternative genetic factors, each of them not uncommon, may occupy a particular locus on a chromosome; and one would then expect one of the alternative forms to have some selective advantages and to replace the rest by natural selection, except for a small proportion maintained by mutations. The best examples of such polymorphism in man are the blood-groups. Death due to hæmolytic disease of the newborn from rhesus incompatibility tends to lower the frequency of whichever is the least frequent gene in the community—that for D or that for d. The present dimorphism in the population of England and Wales might be due, as suggested by Haldane[3] and also Wiener,[4] to a recent mixture of predominantly rhesus-positive and predominantly rhesus-negative races. This suggestion gained weight from the discovery that the Basques were predominantly rhesus-negative. It is also possible, however, that the present position arises from a balance between the tendency for d to be lost through deaths from hæmolytic disease and a tendency for the gene for it to become more common from an increased fertility of those who possess it.

In 1947 Waterhouse and Hogben[5] suggested, from an analysis of the recorded information on families in which the groups of mother, father, and child were given, that there was a pronounced deficit of A children of O mothers. They attributed this to the early loss of A fœtuses from blood-group incompatibility of mother and child. Boorman,[6] however, in personal observations with Daley and Dodd, was unable to confirm this. Struthers[7] suggested that the discrepancy might be due to the loss of A children not prenatally but in infancy. He claimed that in a sample of children coming to necropsy in a Glasgow hospital there was a distinct excess of group-A children, in all of whom there was post-mortem evidence of bronchopneumonia.

If selection of this kind is taking place against the gene for the A antigen, the population may not be in equilibrium, and the present proportions of A and O may be due to a recent mixture of a predominantly O race and a predominantly A race; but more probably the loss of genes for the A antigen is balanced by some countervailing advantage conferred by this gene. Kirk et al.[8] claim to have discovered in Australia some remark-

2. See *Lancet*, March 14, 1953 p. 538.
3. Haldane, J. B. S. *Ann. Eugen, Lond.* 1942, **11**, 333.
4. Wiener, A. S. *Science*, 1942, **96**, 407.
5. Waterhouse, J. A. H., Hogben, L. *Brit. J. soc. Med.* 1947, **1**, 1.
6. Boorman, K. E. *Ann. Eugen., Lond.* 1950, **15**, 120.
7. Struthers, D. *Brit. J. soc. Med.* 1951, **4**, 223.
8. Kirk, R. L., Kirk, M., Stenhouse, N. S. *Ibid*, 1953, **7**, 1.

able differences in the fertility of A and O mothers. The over-all fertility, they found, was slightly, though not significantly, higher in group A; but these women had notably more pregnancies between 25 and 35 years of age. The O women had more children under 25 and over 35. These workers suggest that the difference may be due to an inherently higher fecundity of O women, some of whom, however, become infertile early in their married life from blood-group incompatibility. The higher fertility of the A mothers would balance this loss of the genes for the A antigen among the children of O mothers. In a letter this week Dr. Allan suggests that further inferences may be drawn from the published figures on the relative fertility of A, B, and O women.

Nevertheless so far none of the findings and the suggestions based on them are entirely convincing. In one or two studies tests of significance may have been used incorrectly. To test a hypothesis by applying significance tests to an observed set of figures, it is necessary that the hypothesis should have been clearly formulated before the figures are examined or, better still, even collected. By examining a random set of figures from a sufficient number of different angles it is possible to find some "significant" differences in almost any set. A hypothesis suggested by examination of a set of figures should be retested on a new independent series to which significance tests may be justifiably applied. We hope that those who work with blood-groups will collect fresh series of figures relating blood-groups to fertility and infant survival, and so test the various fascinating hypotheses that have been put forward.

THE PRIVATE BED

FROM the end of this month there will be a new and better system of calculating the charges made to private patients occupying pay-beds in National Health Service hospitals.[1] Where such beds are not in a self-contained block or wing whose running costs can be separately computed, the charge made to the patient is at present based on the average daily cost per inpatient for the hospital as a whole, to which is added 25% for a single room, 15% for a room shared with one other patient, and 5% for a room shared with more than one patient. Under the new regulations the charges will be altered, first by reducing these percentages to 15, 10, and 5 respectively, and secondly by subtracting from the "average daily cost per inpatient for the hospital as a whole" the cost of certain services from which the private patient derives no benefit (e.g., almoner's department and medical records department) and the remuneration of the medical and dental staffs. (Where admission to a private bed entitles the patient to medical care from hospital doctors—e.g., house-physicians—other than the doctors to whom he pays fees, an appropriate amount will be added to the charge for his accommodation.) In calculating the average daily cost of inpatients "no allowance can be made for the vacant bed factor," and there is at present to be no change in the procedure whereby the care of 5 outpatients is regarded as the equivalent of one inpatient day—an arbitrary estimate which sometimes makes the cost of inpatients seem higher than it is. But the regulations go a long way to meet our wish that "the N.H.S. should neither penalise the private patient, nor try to make a profit out of him, by charging him more than the true cost."[2] The charges for pay-beds will now, we hope, be a less grave deterrent to their use—though some patients may not approve as strongly as their doctors of the new and reasonable arrangement by which, in exceptional circumstances, the total of medical fees payable by them may be raised from 75 to 125 guineas. In the memorandum that we publish on p. 643 the Joint Consultants Committee express legitimate satisfaction with the results of their lengthy negotiations with the Ministry (and the Minister) but regret the continuation of the schedule which divides operations into major, intermediate, and minor. This schedule has been altered in some details, but the committee, disapproving in principle, declines any responsibility for it either in the old form or the new.

The Minister asks that steps should always be taken to ensure that patients know exactly what obligations they are undertaking in booking a private bed. They should be told of the existence of "amenity beds" (if there are any) and not be left with the impression that they can secure privacy only by paying for a private bed and medical fees. "It should also be made clear to patients who need immediate admission on medical grounds that they can be admitted at once as general patients."

1. Statutory Instruments, 1953, no. 420. Ministry of Health Circulars R.H.B.(53)26, H.M.C.(53)24, and B.G.(53)26.
2. *Lancet*, 1952, ii, 229.

GAMMA-GLOBULIN AND POLIOMYELITIS

A FEW months ago we described the results of an investigation in the U.S.A. of the protective action of gamma-globulin against poliomyelitis.[1] The figures cited by Hammon and his co-workers[2] left little doubt that gamma-globulin protected against poliomyelitis; but its widespread use seemed unlikely because of the large dose required. One possible application of it would be as an "umbrella" in preliminary trials of attenuated poliomyelitis virus vaccines; another is suggested by the work of Adams et al.[3] on tonsillectomised monkeys.

It has been known for some years that tonsillectomy during a poliomyelitis outbreak carries a grave risk of bulbar poliomyelitis. Experimentally, too, it has been found that tonsillectomised monkeys show an increased rate of paralysis when fed virus for 3 to 5 days after operation. Now, Adams et al.[3] find that tonsillectomised monkeys can be protected from paralysis by an injection of human gamma-globulin before they are fed with virus. The dose of gamma-globulin was enormous (2 ml. per lb. body-weight), but it should be remembered that the monkey is a foreign species and that smaller doses of homologous globulin might suffice. Fortunately there are not many operations on the throat which cannot be postponed until a poliomyelitis epidemic has subsided, but there may be an occasional emergency case where gamma-globulin would be valuable.

FOUR members of the medical profession are among the twenty-five newly elected fellows of the Royal Society. They are: Dr. HENRY BARCROFT, professor of physiology in the University of London, at St. Thomas's Hospital medical school: Dr. G. W. HARRIS, Fitzmary professor of physiology in the University of London, at the Institute of Psychiatry; Dr. L. S. PENROSE, Galton professor of eugenics in the University of London, at University College; and Dr. DAVID WHITTERIDGE, professor of physiology in the University of Edinburgh. The following have also been elected to the fellowship: Mr. KENNETH BAILEY, PH.D., assistant director of research in the department of biochemistry of the University of Cambridge; Mr. J. W. CORNFORTH, D.PHIL. a member of the staff of the chemotherapy department of the National Institute for Medical Research, London; Mr. C. S. ELTON, director of the Bureau of Animal Population, Oxford; Mr. E. F. GALE, SC.D., reader in chemical microbiology in the University of Cambridge; and Lord ROTHSCHILD, SC.D., chairman of the Agricultural Research Council.

1. *Lancet*, 1952, ii, 970.
2. Hammon, W. M., Corriell, L. L., Stokes, J. jun. *J. Amer. med. Ass.* 1952, **150**, 739.
3. Adams, J. M., Boak, R. A., Carpenter, C. M., French, J. D., Klein, S. J., Pressman, J. J., Smith, J. L. *J. Lab. clin. Med.* 1953, **41**, 142.

The Wider World

OBSERVATIONS ON THE EPIDEMIOLOGY OF STONE IN THE BLADDER IN THAILAND *

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THE medical visitor to Thailand is soon informed that stone in the bladder is a common complaint in parts of the country. But precise information about the epidemiology of the condition is hard to obtain and the only literature in English which I could find was a report of an address given to the Thailand Research Society in 1940 by Dr. Pyn Muangman, director of the radiology department in the Siriraj Hospital in Bangkok. In this he records that large numbers of persons come to Bangkok for operation, especially from the north-eastern provinces, Korat and Ubon. He sums up local opinion as to ætiology thus: "Every factor ideal for stone formation, seems to be present: (1) deficient food, (2) excessive calcium intake from drinking water, and (3) vitamin D excess from the sun's rays."

The opportunity arose to visit Ubon province during November and December, 1951, in company with Dr. Amara Chandrapananda, a nutritionist from the Thailand department of public health. I had already spent some time in Bangkok and toured peninsular Thailand (fig. 1), going as far as Yala near the Malay border, and had satisfied myself that there was no undue incidence of bladder stone either in the capital or in the south.

Ubonrachatani is the capital of the most easterly province of North-East Thailand. The population of the province in 1947 was recorded as 850,000. The total area of the province is 2,221,900 hectares, but less than 10% of this is cultivated. The soil is poor and there is much shifting cultivation, with land left fallow for many years; the large area of uncultivated land, together with a sparsity of people, gives the countryside an appearance reminiscent of parts of Africa and quite unlike that of neighbouring countries in South-East Asia. Rice is the principal crop and according to official figures accounts for 99·5% of the area shown. Tobacco, maize, and cotton make up the tiny remainder. Visits to farms and villages did not cause me to dispute this figure. Rice and only rice can be seen growing in the fields. There are still considerable areas of uncut forest, which provide minor industries for the people. Trees are tapped and supply a variety of resins, which are used for making torches, for waterproofing, and so on. Cattle are kept as beasts of burden and raised for export to central Thailand: they are never milked and seldom killed and eaten. Goats are seldom seen. Should they be introduced and flourish, the effect on the countryside is likely to be disastrous and the parallel with Africa soon complete. Cattle manure is collected under the houses and used to fertilise the mulberry gardens and the tobacco patches. Cotton does not grow well and the people are too poor to buy it; perforce many must wear homespun silk. During the rains there is an abundant supply of fish.

Ubon has three seasons. The hot weather lasts from March to May, the monsoon from May to October, and a cold season from November to February. There is no meteorological station in the province, but in Udomthani, which is nearby, a yearly rainfall from 1000 mm. to nearly 2000 mm. is recorded. This is often concentrated into a short space of time and may give rise to widespread floods, isolating many districts for weeks together. The cold weather is delightful: the days are dry and sunny and at night the temperature drops to about 12°C. In the hot weather there is little or no rain, temperatures rise to over 40°C, and it is easy to imagine that much of the landscape is reduced in appearance to a desert.

The peasants are nearly all Thais who migrated from the North generations ago. In the town many of the merchants are recent immigrants from China. They rarely suffer from stone. The Thais themselves are a cheerful people, who perpetually seem to put a brave face towards their poverty. They are Buddhist by religion, and the saffron-robed priests are a feature of every village. The monastery compound usually provides a school: many of the village temples are fine examples of rural craftsmanship and taste. The people suffer from few, if any, dietary prohibitions. Although rice (and in season fish) is their sole real food, it may be garnished with almost anything which is either animal or vegetable. Nothing else is systematically cultivated, but almost anything that the countryside presents may be eaten. A full account of local agriculture with beautiful illustrations has been given by Pendleton (1943).

UBONRACHATANI HOSPITAL RECORDS

Ubon town has a hospital containing 100 beds and is well equipped for surgery. It is the only government hospital serving the 850,000 inhabitants of the province. There is a well-kept operation register. Dr. Chovit Chutikom, the surgeon-in-charge, had been through the register for the period 1936–42, and in the seven years 1250 operations for vesical calculus were recorded. Through the courtesy of Dr. Chutikom, I went through the register for 1948–51 and found that during the four years 610 operations had been performed on persons resident in the province: in addition there were a few

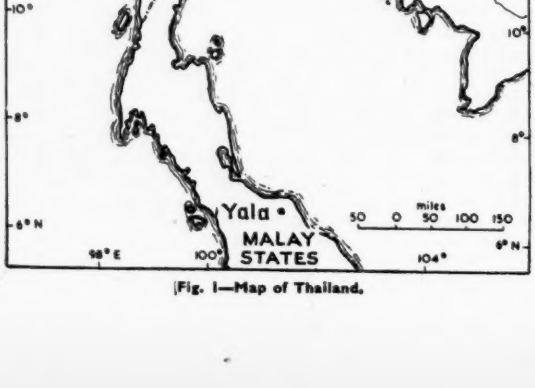

Fig. 1—Map of Thailand.

* This study was made whilst on a visit to Thailand as a nutrition consultant on behalf of the Food and Agriculture Organisation of the United Nations.

OPERATIONS FOR STONE IN THE BLADDER AT UBON HOSPITAL DURING 1948–51. (PERSONS FROM OUTSIDE THE PROVINCE EXCLUDED)

District from which patient came	Population of district	Number of operations	Operations per 10,000 per year
Muang	67,052	66	2·5
Varind	79,665	58	1·8
Pibulmungsahan ..	68,616	74	2·7
Amnajcharea ..	97,504	49	1·3
Yastotorn	90,620	40	1·1
Traganpunpol ..	87,740	50	1·4
Kemraj	52,458	23	1·1
Mahe-chanajai ..	42,155	39	2·3
Muangsomsib ..	50,347	39	1·7
Kuengnai	46,585	60	3·2
Loompuk	44,404	39	2·2
Kongjuen	30,405	7	0·6
Dej-udom	53,076	35	1·6
Lalngnokta	39,914	31	2·2
Whole province ..	850,541	610	1·8

operations on visitors normally resident outside the province. I was told that a small but unknown number of sufferers from stone went to Bangkok for operation.

The accompanying table shows the distribution of the homes of those operated on in the various districts of the province. It will be seen that the patients came from all over the province and there is no evidence of any special focus. Fig. 2 shows the age and sex distribution of the patients. The operation-rates are calculated on a basis of population structure provided by the department of vital statistics at the Thailand ministry of health. It will be seen that males outnumber females by nearly 8 to 1. The operation is performed on persons of all ages, but there is a peak incidence in small boys with a maximum of 14·5 operations per 10,000 persons in the fifth year. Three operations were done on infants under one year. A large chest in the hospital office contains a great collection of stones. Many specimens of all the common varieties are present and no single type appears to predominate.

Dr. Chutikom records that in 25% of the patients there was a history of another member of the family suffering from stone. All the patients complained of difficult and painful micturition with frequency: about two-thirds complained of hæmaturia and about one-quarter gave a history of passing small stones or gravel on urination. Diagnosis presented no difficulty and was usually made by the patient or his parents, the significance of the symptoms being well known amongst the people. Symptoms had usually been present for six months to two years before operation, but sometimes patients came up after many years of suffering. In Dr. Chutikom's series there were only 10 cases of recurrence (i.e., less than 1%). Dr. Chutikom told me that renal calculi were rare and at the most he removed one or two a year.

OBSERVATIONS IN THE VILLAGES

At the time of our visit there were only 2 patients with stone in hospital. The rice harvest was being gathered in and this activity takes precedence over lithotomies. Accordingly we made visits to villages in the districts where the hospital records indicated that stones might be prevalent. We found a high incidence in the village of Nong Kai Nog, in the Muang Samsib district. The village schoolmaster had been forewarned of our visit and had gathered 16 sometime sufferers for us in a coconut grove around the wat or temple. Of these, 4 had been operated on, 5 stated they had previously passed a small stone, and 7 complained of present pain and dysuria. There were in the village 390 families and the population was about 2000. So approximately 1 out of 125 persons had suffered from stone at some time. On the previous day at the village of Loa Bog we had found 13 sufferers out of 2500 people (an incidence of about 1 in 200). We examined a large number of children in these and other villages in the province. By Western standards they were clearly undersized, but on South-East Asian standards they were, for the most part, a sturdy lot. Stigmata of deficiency diseases were not common. It was usually possible to demonstrate in any group an early case of xerophthalmia or of angular stomatitis. But no well-marked case was seen. Very few spleens were palpable and severe anæmia was not common. The teeth were almost all uniformly good. Yaws was endemic in the district, but we saw no evidence of syphilis. In most villages there were one or two persons with obvious goitre. In brief, the general health and nutrition of the children appeared no worse and perhaps a little better than of the children in thousands of other villages in Thailand and other parts of South-East Asia who do not suffer from stone. A much more complete study of the incidence of disease in the area has been given by Zimmerman and Vaidhyakara (1933).

Dietary histories were collected in all the villages. In addition to the rice, which is home-pounded, most families got a little fish every day (this would be impossible in the hot weather). They only have meat on rare occasions.

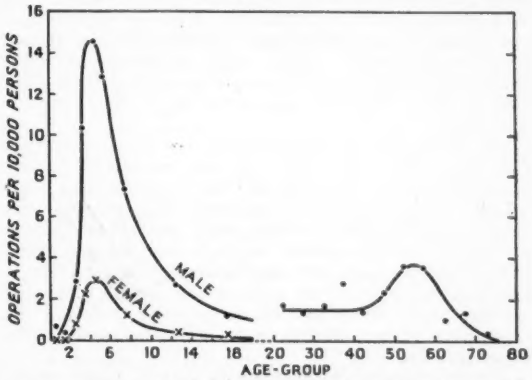

Fig. 2—Operations for stone in the bladder, Ubon Province, 1948-51. Standardised annual rates per 100,000 persons.

Milk and pulse are never eaten. There is a great variety of fruit trees (notably mango) around the villages and in nearby woods which must contribute beneficially to the diet. Coconut oil is the only available edible fat, but little is eaten and food is seldom fried. The rice and fish are usually garnished with leaves or vegetables, which are gathered unsystematically. We collected the leaves of a large number of shrubs and trees which are eaten on occasion. Not a few of the children stated that sometimes they ate frogs and a variety of insects.

DISCUSSION

The high incidence of stone in small boys probably reflects the anatomy of their urethras. Presumably the basic biochemical lesion must be much commoner than the surgical complaint. Probably large numbers of the population at one time or another form deposits in the bladder; but, except in the case of small boys, such deposits are usually voided with the urine. Apparently urinary deposits rarely settle and grow stones in the kidneys: we heard no description of renal colic. That vitamin-A deficiency is a predisposing factor to stone formation is possible, but that it is an important precipitating cause is extremely unlikely. Although the diet is certainly not rich in vitamin-A activity, clear-cut clinical signs of deficiency of the vitamin are not common. An excess calcium intake is also an unlikely ætiological agent. The staple rice has a low calcium content. No other food, regularly consumed, could add an excess of the mineral. Chemical analyses of the water were not made, but on the simple shaving test it seemed to be

softer than Thames water. Water can never contribute an excess of calcium to a diet beyond physiological tolerance. It must be emphasised that McCarrison (1927), in his experimental production of stone in the bladder of rats, used a highly artificial mixture of foods devoid of vitamin A and with a great excess of calcium. No natural diet possesses this combination.

Swift Joly (1929), in his great review of the distribution of bladder stones throughout the world, has shown that in Western Europe and in the the United States of America there has been an enormous change in the incidence of vesical calculi since the 17th and 18th centuries, when the great itinerant lithotomists flourished. Bladder stone in childhood is now a rare disease. That an all-round improvement in the diets of children has been an important general factor in this decline is not improbable. But the absence of a factor of proven prophylactic value need not by itself cause the onset of a disease. The widespread distribution of deficiency diseases throughout South-East Asia contrasts with the restricted foci of bladder stones and makes a direct causal relationship unlikely. A similar argument applies to climate effects. Ubon, like other stone areas such as parts of the Punjab and Persia, has a hot dry season. Urinary outputs must inevitably be reduced and some concentration of urinary constituents result. This might predispose to stone formation. But most hot countries are free from stone and in the past it has been common in such places as Iceland.

An interesting speculation is that a positive noxious factor in the diet might be the responsible agent. Undoubtedly the children of Ubon province eat many strange foods. One such, consumed only on occasions, might contain a poison which upsets the delicate balance of urinary colloids which, as Butt and Hauser (1952) show, help to keep the supersaturated electrolytes in solution. An interference with surface tension within the bladder might follow and allow the stone to form. An up-to-date review of this work has appeared in the *Lancet* (1953).

Another possible mechanism is that a poison might interfere with either the production or the excretion of citric acid by the kidney. Shorr (1945) has brought forward the claim that " citric acid is not a waste product but a useful urinary constituent by virtue of its capacity to enhance calcium solubility." He has shown that in certain circumstances, notably in hyperparathyroidism, there is a close parallel between levels of urinary calcium and urinary citric acid. Œstrogens are also able to raise the urinary output of citric acid. Further, Scott et al. (1943) report that " non-infected recurrent renal stone formers excrete subnormal amounts of citric acid in their urine." That plant poisons can upset citric acid metabolism is well known. The poisonous South African plant *Gifblaar* is responsible for the deaths of sheep and cattle. Its botanical name is *Dichapatalum cymosum*. The poison in the plant is potassium fluoracetate and this exerts its lethal action by preventing the kidney from removing citric acid, which accumulates in that organ in concentrations 56 times above normal (see Peters 1949). Might not another plant poison prevent the normal excretion of citric acid in the urine and so break up a mechanism for keeping supersaturated salts in solution ? But this is pure speculation.

That stone formation in the bladder is due to the disturbance of a complicated biochemical mechanism is certain. The nature of this mechanism awaits discovery. Should any clues with a practical consequence be forthcoming from biochemistry laboratories, the children in the villages of Nong Kai Nog and Loa Bog in North-East Thailand provide suitable material for testing their validity. Until such a biochemical advance takes place, these children must continue to rely upon their surgeon to relieve them of their pain and suffering.

I owe a great debt to Dr. Chovit Chutikom and Dr. Amara Chandrapananda. Without their ready and cheerful assistance it would have been impossible for a stranger to undertake these field studies.

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Special Articles

DERMATOLOGY IN LONDON
Past and Present

FROM A CORRESPONDENT

THE year 1714 is one which commands no little space in the larger history books. In its early months the matter of the Hanoverian succession had been settled, and clinched by a proclamation (June 23) which warned the citizens that if the son of James II arrived in England he was to be apprehended forthwith. Early on July 28, John Arbuthnot, the friend of Swift and Pope, and physician extraordinary to Queen Anne, was summoned to the Palace, and on Aug. 1 the Queen thankfully relinquished forever the cares of her great office. " Sleep was never more welcome to a weary traveller than death was to her."

Possibly, as Arbuthnot penned these words, there was in his room a copy of the new book *De Morbis Cutaneis, a Treatise of Diseases Incident to the Skin* written by his colleague, Daniel Turner, of the College of Physicians, London. For Arbuthnot was at least as much interested in literature as he was in medicine ; the written work of a colleague was always of interest to him ; and this was the first attempt in English to bring some order to the chaos of dermatology.

A portrait of Turner shows a man about forty years of age, with a firm mouth and well-moulded chin, a large nose, wide-set eyes, and a lofty brow. He looks resolute and stern. Obviously he was not a man to be trifled with ; pioneers seldom are. His book was widely read in England and the Colonies. A second edition was published in 1723. In the same year he received from Yale College the first medical degree given in English-speaking North America.

In 1757 Robert Willan was born. It is said that he came to London in 1782 and the next year was appointed to the Public Dispensary in Carey Street, where he established the bedside method of teaching. Doubtless it is a mistake to compare the portraits of two men in an attempt to judge their characters, but we can say that Willan had more kindly lineaments than Turner. The chin was less pronounced, the lips more full, more ready to smile, the nose aquiline, the eyes larger but the gaze very direct, the brow broader but less high ; a very intelligent face tinctured with understanding and kindliness. This was the man who, in 1785, submitted to the Medical Society of London a plan for the classification of skin diseases, for which five years later he received the Fothergillian medal. In 1808 the first volume of his work *On Cutaneous Diseases* was published by J. Johnson of St. Paul's Churchyard.

As Pusey has written, " Willan's reputation cannot be separated from that of his faithful associate, Thomas Bateman (1778–1821) " ; for when Willan died, at the age of 55, before his treatise could be completed, his work was continued by the man who had been his colleague for ten years at the Public Dispensary. Bateman published an important work entitled *A Practical*

Synopsis of Cutaneous Diseases, the sole purpose of which was to present an abstract of Willan's classification of skin diseases and to elaborate that work; some seven editions of this book were printed and it was translated into French, German, and Italian. He also published *Delineations of the Cutaneous Diseases comprised in the Classification of the late Dr. Willan*, which contained a large number of coloured plates.

THE LONDON "SCHOOL"

It was through the work of these three—Turner, Willan, and Bateman—that many years ago England achieved an international reputation for the clinical study of skin diseases. There followed men such as W. C. Dendy, Jonathan Green, A. T. Thompson, and Samuel Plumbe, and later Erasmus Wilson, Tilbury Fox, Jonathan Hutchinson, Colcott Fox, and Radcliffe Crocker. Thus, starting with the impetus conferred by the work of Turner and Willan, there came into being what we may loosely term a school of dermatology, which was not only particularly English but particularly of London; and in saying this we do not wish to belittle the brilliant work performed at other centres in the United Kingdom—by, for example, J. N. Neligan of Dublin, H. G. Brooke of Manchester, W. A. Jamieson of Edinburgh, and T. McCall Anderson of Glasgow.

As is well known, the teaching of dermatology in London during the latter half of the 19th century, though competing with the work of Hebra in Vienna, Unna in Hamburg, and the flourishing French school at the St. Louis Hospital in Paris, influenced the practice of that specialty in many parts at home and abroad.

The influence of the London school was fostered by the action of Erasmus Wilson in establishing a *Journal of Cutaneous Diseases* in 1867, the foundation of the Dermatological Society of London in 1882, and the inauguration of the Dermatological Society of Great Britain and Ireland in 1894. These societies merged to form the dermatological section of the Royal Society of Medicine in 1907; and it would be difficult to overestimate the importance of the frequent meetings of that body in moulding clinical opinion in dermatology in this country.

In 1921, largely on the initiative of Dr. A. M. H. (now Sir Archibald) Gray, the British Association of Dermatology and Syphilis was founded, its first meeting being held in London, whence its journal has always been published. The association meets annually in a different town in Britain, not infrequently in London. Membership tends to be restricted to those who have become established and have made some mark in the specialty.

The London Dermatological Society was founded in 1912 and was renamed the St. John's Hospital Dermatological Society in 1926. This society also has much influence; its meetings are well attended, its discussions are often lively, and its annual oration has been given by many distinguished men, both from at home and abroad. In 1934 Dr. R. Prosser White bequeathed a sum of money to finance this oration, which was renamed the Prosser White oration.

The particular genius of London dermatology has lain in a flair for diagnosis, on which visitors from abroad have always commented; on integrity in the assessment of therapeutic measures, which more enthusiastic practitioners have found ruthless and chilling; and on a capacity for rapidly assimilating advances made elsewhere.

On the Continent, dermatology and venereology are usually combined in practice, and ample provision in hospital beds and in laboratory space and equipment is made for the two subjects in a single department. In London this arrangement is not considered rational or desirable, and few hospital beds and little laboratory space, except for histopathology, have been given to dermatology alone. This major defect may perhaps explain why London dermatologists have hitherto tended to regard the practice of dermatology as all-important and have failed to attract research-workers to a subject in which they are much needed.

POSTGRADUATE TEACHING

For many years, postgraduate students have come to London from far-distant countries, as well as from the universities at home, to absorb the practical teaching which London dermatologists could give. In this postgraduate migration, St. John's Hospital for Diseases of the Skin, with its associated London School of Dermatology, played a large part. The school was founded in 1923. Instruction in the form of lectures and clinical demonstrations was conducted by the (then) honorary staff of St. John's Hospital and the heads of the skin departments of the London undergraduate teaching hospitals, a department of special pathology being directed by Dr. J. M. H. MacLeod.

In July, 1948, the Institute of Dermatology, an institute of the British Postgraduate Medical Federation, was constituted on the foundations of this London School of Dermatology, remaining attached to St. John's Hospital, which was designated a postgraduate teaching hospital under the National Health Service Act. The Institute of Dermatology is now under the control of a director; the pathology department has been extended to include sub-departments of medical mycology and biochemistry, in addition to histopathology; a large and expanding museum of "moulages," photographs, and coloured drawings has been added, and a library has been included. Besides arranging for postgraduate teaching on the widest scale, the institute provides facilities and encouragement for clinical investigation and scientific research. An annual prize (the Chesterfield medal), which was founded in 1895, is awarded on the results of an examination.

The inpatient department of St. John's Hospital having been destroyed in 1940, a new one has been opened in North London, where the teaching activities of the Institute will be further extended. In addition, postgraduates at the Institute may sometimes obtain facilities to enlarge their experience considerably by visiting the skin departments of the general teaching hospitals; and here they may witness various methods of undergraduate instruction. Overseas students who have followed this course in the past have often said that, owing to its wealth of material and variety of teaching, London is in their opinion the most valuable dermatological teaching centre in the world. Outside the circle of schools associated with the University of London, visitors are likely to be made welcome at the London Skin Hospital and at the Skin Hospital at Blackfriars.

* * *

Though brief, these notes will perhaps suffice to show that the dermatologists of London today are endeavouring to continue the tradition founded by Turner, Willan, and Bateman, and have much to offer the postgraduate student who possesses ability and who is willing to do his best.

SYMBIOSIS AT HILL END

SOME ACHIEVEMENTS AND OPPORTUNITIES

DURING the war, Hill End Mental Hospital, at St. Albans, was called on to provide out-of-London wards for St. Bartholomew's; and the partnership thus begun has persisted. Hill End was vast enough to give such hospitality—a rambling Victorian structure, as able to accommodate guests as a Victorian house. The simile, however, must not be stretched too far; for Victorian houses were often solidly comfortable and convenient, whereas Victorian hospitals seem to have

specialised in discomfort and inconvenience. At Hill End, as in so many of our great mental hospitals, some of the wards used by St. Bartholomew's open endlessly from each other like picture galleries; others are so large and low that even ample windows would not dispel the central gloom, while corridors, like symbols of despair, daunt the heart with interminable perspectives. Yet a great deal has been done to mitigate these and other drawbacks at relatively little cost. Dr. Harold Palmer, the medical superintendent, and the management committee have achieved this by a policy which combines æsthetics, humanity, and reasonable economy.

ÆSTHETICS

We have often had occasion to speak of the influence on the spirits of the colour of paintwork in hospitals. Dark-brown paint on the walls and varnished pine woodwork were a passion among Victorian builders of institutions, and this curiously distasteful form of interior decoration has been maintained in many of our mental hospitals. At Hill End it is being steadily obliterated. There are still outcrops (the superintendent's office and the doctors' library are still honourably waiting their turn for redecoration); but in the wards, the secretarial departments, and the corridors pastel colourings of walls and wood have changed the aspect and spirit of the place. Professional artists have chosen most of the colour schemes, which aim at breaking up long vistas, drawing attention to intersecting planes or interesting recesses, and resting the eye with a pleasing variety of colours. This has been specially successful in some of the long corridors, and in a once dingy concert hall, now entirely beautiful. The effect on the mood of the staff has been considerable: staff dances are now packed, and the social clubs have funds in hand. No doubt the effect on patients has been equally good. We may recall Dr. L. Z. Cosin's experience, at Orsett Lodge Hospital, of the effect on the chronic and aged sick of agreeable colouring and energetic murals[1]: and sick people do not need to be aged to profit from such things. In particular the low dark wards at Hill End have been improved by the great gain in light from shell-pink walls or aquamarine ceilings.

HUMANITY

All this has been achieved with a very moderate outlay, and with no structural alterations whatever. This does not mean, of course, that structural alterations would not be desirable: many of the wards would benefit from a revision of their design on the lines indicated in the report of the Nuffield Job Analysis Team.[2] Sluice-rooms, bathrooms, and washbasins are often awkwardly placed. Patients' water-closets may be divorced from washing facilities by the length of half a ward, screens are scarce, and some of them are of old-fashioned and heavy design. But since the spirit of a place is what determines the standard of the work done in it, it is well to begin by making surroundings cheerful, even if they are not ideally equipped. The convenience of the staff is considered too. They are well supplied with public telephones (one being in the nurses' home), their uniforms are nicely cut, and, in particular, their food is nourishing, various, and served hot. A noticeable result of this kind of consideration is that the staff are contributing their share to the general good: on their own inititative, nurses have been found weeding flower-beds, electricians have woven a garland of coloured lights round the chandelier of the dance hall, and male nurses and porters have made a lawn from a derelict stretch of grass, sparing, in the process, a watery depression in which birds like to bath. Things of this kind do not happen in hospitals where the staff are disgruntled.

Patients' visitors—sometimes a nuisance and too often made to feel it—are here treated with courtesy and kindness. A large room, charmingly decorated and well warmed, has been set aside for them to use if they need to wait any length of time. Small simple bedrooms open from it, where those who have to stay a night, or longer, can sleep, and hot meals are served to them at very low rates. Sometimes relatives may need to stay a fortnight or longer, but they do not find themselves outstaying their welcome.

These are all the sort of things which help to build up a society of service rather than a society of contract.

ECONOMY

It has been said already that lavish outlay is not attempted; on the contrary, Hill End offers an example of economy and retrenchment. Thus the staff of porters has been cut down, though the number of patients has been increased. The hospital operating-theatres have an old-world look, with walls of painted brick and a network of pipes and girders overhead that seem designed for trapping dust; but the St. Bartholomew's surgeons use them regularly and successfully. The X-ray equipment is good, but housed in a nondescript room, with a makeshift darkroom near at hand. There is no drier for the films—they hang on a clothes-line fanned by a small electric fan. It is all very amateur and inglorious; but reasonably efficient.

INTEGRATION

The staffs of the two hospitals work together in amity. Miss V.M. Houghton, the matron, Mrs. I. C. Thacker, the St. Bartholomew's assistant matron at Hill End, and Dr. Palmer are colleagues collaborating successfully in a joint enterprise, and they are creating an integrated hospital in which there is a sense of partnership between all members of the staff. The same good relationship extends to the family doctors of the neighbourhood, who feel they can turn to Hill End on behalf of any of their patients; and their patients —including those who are mentally sick—share this confidence. Nothing could be more effective in removing the "stigma" of treatment in a mental hospital than the reunion—now gradually being achieved—of mental and general medicine. When the patient with a mental or emotional disorder knows he can go to his usual hospital for treatment he is greatly reassured, and feels little hesitation in presenting himself as a voluntary patient.

The fact that the association with St. Bartholomew's has had particularly happy results of this kind suggests strongly that Hill End could be made the centre of a new experiment in nursing. St. Bartholomew's has student nurses in plenty, and usually a waiting-list; Hill End, like other mental hospitals, is short of nurses. Surely here is a most fortunate opportunity to give nurses in general training a short term of experience in mental nursing. The prejudice in the nursing profession against mental nursing springs very largely from fear and ignorance—useless attributes in a nurse. Those who work with the mentally sick know how quickly any preliminary apprehension fades in the presence of patients. These sick people are no more alarming than their counterparts in medical and surgical wards: in fact, they appeal, perhaps more strongly than any other type of patient, to the parental instinct. It seems highly probable that, if nurses in general training were allowed to see something of mental patients, they would not only gain in professional insight but some of them would seek a career in mental nursing when they had qualified; and there is no branch of nursing where they are more greatly or urgently needed.

1. *Lancet*, 1947, i, 840.
2. The Work of Nurses in Hospital Wards. London: The Nuffield Provincial Hospitals Trust, 1953; see *Lancet*, Feb. 21, 1953, p. 379.

ESTIMATES FOR 1953–54

THE National Health Service estimates for 1953–54 [1] allow for gross expenditure in England, Scotland, and Wales of £487,984,040, compared with £515,381,500 in 1952–53. These totals are made up as follows:

	1953–54 (£)	1952–53 (£)
Central Council, &c.	4500	4250
Hospital specialist and ancillary services	305,150,110	304,656,300
Grants to local health authorities	21,558,020	21,233,000
General medical and dental services, pharmaceutical services, and supplementary ophthalmic services	135,215,520	158,280,700
Training services, &c.	1,689,750	1,751,650
Civil Defence services	6,406,100	9,805,200
Other services	17,960,040	19,650,400

Appropriations-in-aid (e.g., from National Insurance contributions) in 1953–54 are expected to total £71,503,680, compared with £76,480,000 in 1952–53, thus bringing the net cost to £416,480,360, as against £438,901,500 in the present year. In arriving at the true cost of the service the expenditure on Civil Defence should be excluded.

The difference between the two years is mainly due to the exceptional expenditure in 1952–53 on retrospective payments under the Danckwerts award on the remuneration of general practitioners. Originally the cost of general medical services for 1952–53 was estimated at £48,500,000,[2] whereas the cost now shown for this year is £86,913,000; in the coming year it is expected to fall back to £58,217,000.

According to the estimates, the cost of the hospital services will drop slightly in 1953–54; and this will be the first year since the inception of the service in which there has been such a decrease.

The grant-in-aid to the Medical Research Council in 1953–54 [1] is set at £1,805,846, compared with £1,898,287 in the present year. Of the total £134,700 is for capital expenditure, and £1,671,146 for general expenses compounded as follows (with deduction of £117,908 for receipts): administration, £70,652; provision for general scientific purposes, £20,707; National Institute for Medical Research, £343,771; research units and external scientific staff, £984,624; special grants to institutions, &c., £187,300; temporary research grants and training awards, £182,000.

PRIVATE TREATMENT IN N.H.S. HOSPITALS

Memorandum from the Joint Consultants Committee

THE Minister of Health has now laid before Parliament new Pay Bed Regulations under sections 4 and 5 of the National Health Service Act, 1946. These regulations are designed to come into operation on April 1 next, when they will supersede the existing regulations.

The new regulations, which have been the subject of lengthy discussions between the Joint Consultants Committee and the Ministry (and with the Minister himself), deal broadly with two matters:

(*a*) The manner in which the charges for private hospital beds shall be assessed.

(*b*) The maximum professional fees to be charged to patients desiring private treatment in hospital.

PRIVATE BED CHARGES

Under section 5 of the 1946 Act, patients seeking treatment in private hospital beds are required to pay the whole cost of the accommodation and services provided. Since 1948 the charges for private beds have risen to an alarming degree, and during the discussions on the new regulations, the Joint Committee sought a personal interview with the Minister of Health, and impressed upon him that unless some action was taken to reduce the charge private practice would steadily diminish. The committee reminded the Minister of the promises of previous Governments that facilities for private practice would be retained under the new service. It pointed out that it was the experience of consultants in many parts of the country that there was a falling-off in the demand for private treatment—due largely in their opinion to the high maintenance charges—and that this was bound also to affect hospital revenue. The committee therefore urged the reintroduction of a moderately priced private bed.

In reply, the Minister stated that he thought the possibility of introducing the necessary legislation during the next two or three years was extremely remote, having regard to the heavy parliamentary programme. The Minister added that while he was anxious not to place any obstacle in the way of private practice he doubted whether the falling-off in private hospital treatment was primarily due to the high charges. He agreed, however, that if this could be substantiated, the position would warrant further consideration because the provisions of section 5 were intended to implement the promise given that private practice facilities should continue.

The new regulations are still designed to secure that the charges for private beds shall represent the whole cost, but there are certain changes in the method of calculating the charges that will, in many cases, result in a reduction of the charge. Thus in hospitals where the total cost of the pay block cannot be determined separately from the cost of the public wards, the percentage increases which are added to the average daily inpatient cost to arrive at the private bed charge are reduced from 25% (single room), 15% (double room), or 5% (multiple-bedded room), to 15%, 10%, and 5% respectively. Furthermore these percentage increases are to be added to the net daily inpatient cost before the addition of the salaries of medical and dental staff instead of after the addition of these salaries as hitherto; and the cost of any service from which the private patient receives no benefit is excluded from the maintenance charge.

MAXIMUM PROFESSIONAL CHARGES

The main criticism which is likely to be levelled by the profession against the new regulations, so far as they concern the professional fees to be charged to private hospital patients, is that the detailed classification of operations is retained.

The Joint Committee made strenuous efforts to persuade the Ministry—and the Minister himself—that the attempt arbitrarily to divide operations into categories of major, intermediate, and minor, without reference to the condition of the individual patient, was unrealistic and unlikely to work satisfactorily. Unfortunately the Minister has adhered to the view that the classification is necessary as a protection to the patient, despite the repeatedly expressed view of the committee that the classification afforded no protection at all but that, on the contrary, the maximum fee for each category of operation was likely to become the standard charge, whereas in the past consultants normally related their fee to the particular requirements of the case and to the patient's circumstances.

The Ministry sought the assistance of the Joint Committee in improving the detailed classification of operations, but because of its view that any classification was impracticable the committee declined to accept any responsibility for it.

Apart from this point of major principle on which the Ministry and the Joint Committee were unable to reach any agreement, there are certain improvements in the 2nd Schedule, setting out the maximum professional fees. The maximum fee that may be charged

1. Civil Estimates for the Year Ending March 31, 1954: Class V: Housing, Local Government, Health, Labour, National Insurance, and National Assistance. H.M. Stationery Office. Pp. 185. 6s.
2. See *Lancet*, 1952, i, 661.

by a physician is increased from 25 to 40 guineas, with a similar increase for a surgeon in cases not involving an operation. There are also changes in the maximum fees in other specialties, and the scale for radiotherapists has been completely revised. The maximum fee payable to a general practitioner attending a patient privately in hospital has been increased from 15 to 20 guineas.

The over-all fee of 75 guineas to be charged by all the practitioners concerned in the patient's treatment is retained as the normal maximum, but provision is now made for this maximum to be increased to not more than 125 guineas (at the discretion of the hospital board or committee) in the following circumstances :

(*a*) when the treatment of the patient in accommodation provided under Section 5 of the Act has lasted four months ; or

(*b*) when the patient needs at least two major operations or at least three major or intermediate operations as part of the same course of treatment during the same stay in such accommodation as aforesaid ; or

(*c*) when the patient requires excision of lung, an operation on the heart or œsophagus, or the excision of a tumour of the brain or spinal cord, or otherwise requires specialised operative techniques involving complicated team-work.

Provision is retained for the maximum charges laid down in the regulations to be exceeded in cases where the patient so agrees.

COLLEGE OF GENERAL PRACTITIONERS

IT is proposed that the peripheral activities of this new college shall be organised by a number of regional faculties.

HEADQUARTERS OF REGIONAL FACULTIES

Ideally the headquarters of these regional faculties should be situated near the offices of the undergraduate and postgraduate deans or directors of the medical schools and the university research departments, for educational purposes and to facilitate arrangements for postgraduate study and research. But in some places this may not be possible ; or headquarters may be offered to the college elsewhere, as has already happened in Birmingham and in Edinburgh. It is felt that a close link like this with the universities will underline the academic nature of the college's work.

In London, the Director of the British Postgraduate Medical Federation has offered the college accommodation at his headquarters (2, Gordon Square, W.C.1). This arrangement will lead to close coöperation between the two bodies, and it is hoped that similar coöperation may be arranged between the college's regional faculties and the postgraduate deans or directors of other university cities.

In the British Isles and Republic of Eire there are 19 universities with medical schools—Aberdeen, Belfast, Birmingham, Bristol, Cambridge, Cardiff, Cork, Dublin, Durham, Edinburgh, Galway, Glasgow, Leeds, Liverpool, London, Manchester, Oxford, Sheffield, and St. Andrews. Pilot faculties will be formed at once in London, Birmingham, Bristol, Cardiff, Edinburgh, Belfast, and Dublin. After the first annual general meeting, to be held next autumn, a further 12 or more regional faculties may be set up in the British Isles : plans for these will be made soon. In areas far away from these university cities faculties may be needed in a few cities or towns that have no medical school (e.g., Plymouth and Inverness). Other regional faculties may be developed in parts of the Commonwealth. Further details will be published next month.

The foundation council has approved the establishment of a "Council of the College in Scotland" to coördinate the regional faculties and other local organisations in Scotland, and to maintain liaison with the council of the college. It is proposed to open an office in Edinburgh at once.

A meeting of general practitioners in Eire, held in Dublin on March 15, decided to form a faculty of the college in Dublin ; and an interim committee was set up to study this. Dr. John Fleetwood of Dublin (chairman of this interim committee) has been elected to the foundation council of the college in London.

A meeting of the full foundation council, held in London on March 18, agreed that the college provisional by-law 1 (B) should be altered to read :

"A 'Registered medical practitioner' means a person holding a medical qualification which has been registered with the General Medical Council or with the equivalent organisation of a country or state within the British Commonwealth of Nations and the Republic of Eire."

STATUS

The status of all regional faculties will be equal. Those in Scotland, Wales, Northern Ireland, and Eire will be free to form colleges of their own in the future, if they wish to do so.

DUTIES

In general the duties of these regional faculties will be to relieve the college's central council of local responsibilities connected with the activities of the college in the regions concerned.

For the first few years the main concern of the faculties will be to help (1) in the teaching of certain aspects of general practice to final-year students and those newly qualified, (2) in the postgraduate education of general practitioners in the region, and (3) in research in general practice. Later many other functions of the college may devolve upon the regional faculties. Members of the board of each faculty will work in liaison with the local medical school, the postgraduate departments of the university and the university research departments, the local medical committees of the executive councils, the local divisions of the British Medical Association, and the local medical societies.

THE BOARDS OF THE REGIONAL FACULTIES

Each board will have up to 21 members.

It will have a chairman (who may be a member of the college council or coöpted to the council), a deputy chairman, a member for undergraduate instruction, a member for postgraduate study, a research member, and an hon. secretary. The secretary will keep in touch with members and associates of the college who work in the region, receiving information from them and providing them with information, so that the college and its regional faculty can give them all possible help in the academic field. There will be up to 15 other members, including two associates ; and the boards will have power to coöpt further members from the university and elsewhere.

Members of the boards of the faculties will be elected annually by the members of the college who live in each region. The officers will be elected by the boards themselves.

Meetings of the boards will take place about once a month. Five will be a quorum. Copies of the minutes of the meetings of the boards will be sent to the college headquarters in London for filing and reference. Each year an annual report from each board will be sent to the college headquarters and incorporated in the college's annual report. Subcommittees on undergraduate education, postgraduate education, research, &c., will be elected by the boards at any time for special purposes. These subcommittees will have power to coöpt members from the university departments concerned. The secretarial expenses of the boards will be met by the college.

Members or associates of the college who care to make further suggestions or comments on the development of these regional faculties are asked to write to the secretary, College of General Practitioners, 14, Black Friars Lane, Queen Victoria Street, London, E.C.4.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

ON March 16, opening the new laboratories at the Chelsea Hospital for Women and the new wing of the Institute of Obstetrics and Gynæcology, Mr. IAIN MACLEOD, the Minister of Health, admitted that these were difficult days in the hospital service, for there were many competing claims on a limited purse. But however urgent other claims might be, we must, he affirmed, never lose sight of the absolute necessity of holding and improving our position in the specialist fields. Stressing the importance of laboratory investigation in gynæcology,

he added that now that women played an ever-increasing part in our national life, it was even more important to seek ways to relieve the unhappiness, discomfort, and pain that gynæcological disorders brought. He ended by drawing attention to the association of friends which the hospital had; he hoped to see the time when every hospital would have a friendly voluntary association of this kind.

Viscount WAVERLEY, chairman of the governing body of the British Postgraduate Medical Federation, recalled how in 1948 the postgraduate units of Queen Charlotte's, Chelsea, and Hammersmith Hospitals were brought together to form the Institute of Obstetrics and Gynæcology, now part of the British Postgraduate Medical Federation. As the three hospitals lay so far apart, each had to have its own laboratories. For Chelsea Hospital this was difficult owing to lack of space, but the Ministry and the South-West Metropolitan Regional Hospital Board had now found accommodation nearby at St. Luke's Hospital.

After the ceremony Mr. Macleod inspected the new premises, which are connected with the Chelsea Hospital by a bridge. The institute's wing includes a lecture-room, a students' common-room, a refectory, and administrative offices; while the Chelsea Hospital's share of the extensions comprise a photographic studio and darkroom and three laboratories for the departments of pathology and endocrinology.

Parliament

Smoking and Lung Cancer

REPLYING to an adjournment debate on this subject on March 19, Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said that in view of the grave rise in the number of deaths from lung cancer the Ministry of Health and the Medical Research Council were stimulating new lines of research into this disease. In their important report on the connection between smoking and cancer Dr. Richard Doll and Prof. Bradford Hill concluded that the association between tobacco-smoking and lung cancer was a real one, the effect varying with the amount smoked. A similar investigation had been carried out in America with the same conclusion. But Miss Hornsby-Smith emphasised that the information which the Ministry of Health had so far received from their Standing Advisory Committee on Cancer and Radiotherapy and from the Medical Research Council showed that they did not regard this report as wholly conclusive. While they accepted that research had shown a statistical relationship between tobacco-smoking and lung cancer, they did not necessarily accept that that statistical relationship meant a causal relationship. All the evidence so far in the possession of the Ministry indicated that the arsenical content of certain tobaccos was too small to be effective in carcinoma. All those concerned were doing their utmost to find a solution, but nothing should be done to panic the population. Research into exhaust gases of petrol and diesel engines had now been abandoned as a possible source contributing to cancer of the lung. The Standing Advisory Committee on Cancer and Radiotherapy had not yet come to any conclusion or given the Ministry any advice beyond the statement on the correlation between tobacco-smoke and cancer of the lung. Therefore the Ministry could only be non-committal for the time being in this matter. It was a long-term matter requiring careful sifting of results and highly complicated experimental work over a long period, and the collection of vital statistical data.

QUESTION TIME

Sickness-rate among Post Office Employees

Replying to a question, Mr. LEONARD GAMMANS, Assistant Postmaster-General, said that the average number of days' sick absence for non-established Post Office staff in 1938 was 8·1 days for men and 9·3 for women; in 1951, it was 15·0 days for men and 18·4 for women. This was an alarming increase, and the Government and the Post Office under successive Administrations had been disturbed about it. He estimated that if the figures were the same as before the war there would be a saving in staff of at least 6500 people.

Prescription Charges

Mr. LESLIE HALE asked the Minister of Health the estimated total net saving to the Exchequer, after making allowances for administrative costs and for the extra cost to the National Assistance Board, both direct and administrative, of the charge of 1*s.* on prescriptions from the time of its introduction to the nearest most convenient date for computation.—Mr. IAIN MACLEOD replied: The estimated net saving to the Exchequer from the prescription charges paid by patients in England and Wales between June 1, 1952, and Dec. 31, 1952, after the deduction of refunds made by the National Assistance Board, is about £2$^{3}/_{4}$ million. Administrative costs, though not known in detail, would not materially affect this estimate. In addition there was a saving to the Exchequer during this period of about £1$^{1}/_{4}$ million because fewer prescriptions were dispensed than would have been expected if charges had not been introduced; though it is possible that other factors contributed to this decrease.

Medical Auxiliaries

Replying to a question, Mr. MACLEOD said that, as the result of discussions with the professional bodies of medical auxiliaries, the Secretary of State for Scotland and he were satisfied that there was insufficient agreement on fundamental matters to proceed with statutory registration on the lines proposed by the Cope Committees. They intended, therefore, as soon as possible to make Regulations to prescribe qualifications for medical auxiliaries for the purpose of employment in the National Health Service. They would shortly give the professional and other bodies concerned an opportunity to comment on an outline of the Regulations proposed.

Public Health

Smallpox

BY noon on March 23 a further 6 cases of smallpox had been notified from Todmorden, where the outbreak reported last week continues. In addition a cotton operative living and working in Oldham has been diagnosed as having smallpox, bringing the total to 11. Another of the first 4 patients died on March 20—the second death in the outbreak. The 6 new patients at Todmorden are all direct contacts of the earlier cases; but so far no contact between them and the Oldham man has been established. It may be that the mill in which he works received cotton waste, or part of a consignment of raw cotton, from the Todmorden mill where the first men to be infected were employed. There have been no more cases in Bacup, the home of a man working in the Todmorden mill who died of smallpox on March 13.

Infectious Diseases Regulations

The Public Health (Infectious Diseases) Regulations, 1953,[1] which come into force on April 1, make a number of changes in the existing regulations, which were first issued in 1927. The provisions governing the action to be taken by local authorities and medical officers of health against the risk of food-poisoning apply at present to "enteric fever and dysentery"; under the new regulations they will apply to "typhoid fever, paratyphoid fever or other salmonella infections, dysentery, and staphylococcal infection likely to cause food poisoning." The 1927 regulations allowed action to be taken only in the matter of a person actually suffering from one of the diseases in question; but from April 1 the provisions will be extended to cover carriers of infection. In future both carriers and people who are clinically ill may be prevented from continuing in or entering an occupation connected with food or drink. At the moment these steps cannot be taken until the medical officer of health has reported the case concerned to the local authority, which may be liable to pay compensation under the Public Health Act, 1936. A new provision will allow a local authority to sanction immediate action in cases where the medical officer of health judges the matter to be urgent.

1. The Public Health (Infectious Diseases) Regulations, 1953. S.I. no. 299. H.M. Stationery Office. 4*d.*

In England Now

A Running Commentary by Peripatetic Correspondents

My first afternoon on the river this season was blank. I collected my licence at the pub, got down to the water's edge, and had hardly put up my rod before my eagle-eyed friend the bailiff was there just to make sure that I wasn't a poacher. He told me that there were few fish up yet and no wonder, for we are short of rain. The water, though low, was beautiful, cold and sparkling in the sunlight. I fished down the Washing Pit without result, though two salmon, probably kelts, heaved themselves out of the water. Down I went to try the Four Acre, and at my second cast was into a fish which gave me ten minutes' fun, agony, and exercise till I had her out on the bank: an ugly kelt she was who had taken my fly half-way down her gullet. In rather a middle-aged manner and cumbered by waders and brogues I ran back to fetch my disgorger—an old pair of Spencer Wells, the best disgorger ever invented—and soon tweaked the fly out.

With loving care I returned the fish to the river and held her upright and upstream till she got her breath back and wobbled off slowly but surely into the deeper water. Never was more trouble taken over a patient.

There was a pair of yellow wagtails to watch and also a pair of dippers before I went off to try the Hurdle Pool in which, and in the Dead Hole below it, there were several large but not very silvery fish jumping from time to time. None came to me and I comforted myself with the reflection that they were probably all kelts. The sunshine was brilliant, and on the trees there was that wonderful reddish purple sheen that one sees in early spring. Yes, a blank afternoon. Or was it?

* * *

As winter epidemics are inevitable and make the doctor's life a burden, I have, over the years, evolved a plan by which I claim I can actually extract pleasure from them.

The first step in Operation Sniffles, as I call it, is to allow plenty of time. Chasing the clock is the chief blight of G.P. epidemic existence, and plenty of time means no private engagements, no cinemas, no dining-out. No appointments means no disappointments.

Next, answer all new calls and visit any serious cases in the daytime. Leave the others till the evening. Once you have your evenings free you can enjoy them. Do not hurry your crowded surgeries. Hurry is bad for the patients' health and for the doctor's temper. You have all night before you, so take your time and enjoy yourself. Besides, it is surprising how many will decide they are not bad enough to wait all that long for their turn.

Remember that for publicity purposes you are *very, very* busy. Accept it; revel in it—but privately. To expressions of sympathy for your hard lot return a wan but heroic smile. Say nothing; the sympathy will increase a hundredfold.

After your leisurely (even if prolonged) evening surgery, have a still more leisurely and ample dinner. Nothing sours the temper like hunger. And now you are all set to enjoy the evening round. Do not start before 9 P.M. "Good Heavens, why, at this time! You *must* be tired," will be your first greeting. And at each succeeding visit you will be good-graciousd and good-heavensed more and more. Sympathy will increase, and so will your self-esteem. Your last four calls have been hand-picked. At the first you may droop a little more wearily, and when pressed to take refreshment permit your scruples to be overcome. But be emphatic that this is quite exceptional. You will be assured it will not hurt you. It will not. At the next two visits the same attitude will serve, but be firm in the amount of restorative you accept, lest at your last and carefully chosen visit cheerfulness should inadvertently break through. This last visit is technically the important one. Here you may allow yourself to be cosseted and refreshed to the limit. Take your fill of appreciation and admiration. You will be beyond criticism hereafter, so in your own good time make your way tranquilly and peacefully homewards, and dare to say you have not enjoyed your evening.

* * *

I don't care what my colleagues say, I've made up my mind. I'm going to be an ologist. Not a proct, not an ot, and not an ur, but a simple straightforward uncomplicated ologist. I've had my plate made "Dr. Disgustis, Ologist," and already I can see the patients beating a path to my door.

An ologist, in case you are unfamiliar with the term, is a specialist who has not confined himself to any one subject, system, or symptom. You may call him, if you wish, a general-practitioner specialist or, if you feel inclined, a specialist general practitioner. Sneer if you wish, pioneering was ever thus; and I can see a great future opening up.

Such a being has long been needed in these days of left-eye ophthalmologists and hair-trigger dignities. What houseman has not been confronted with the horrible politics of nystagmus, for instance. Who to call in? The general specialist, the ophthalmologist, the neurologist, or the industrial medical officer? In future the answer will be easy. Without further thought the medical contact man—the ologist—will be summoned.

In my mind's eye I can see the future version of a familiar scene. "And what are you just going to do?" the old lady is asking the first-year doctor. "Are you going to be an ologist or are you going to specialise?" As I have created this new field the least my regional board can do is appoint me its first consultant in ology.

* * *

As every schoolboy who has failed part I of the D.P.M. knows, the central nervous system is a structure of no little complexity. But much of the difficulty arises because it is littered with Latin or Greek derivatives. The whole thing is understood quite easily, I find, if one substitutes homely Anglo-Saxon terms.

What an interesting organ the cerebellum becomes when we consider that in it are a toothy nut and a clottish nut, presumably growing on the tree of life, while it straddles the fourth little tummy with six little feet which are probably necessary in view of the four little hills just above it. And to make it even more endearing, there are two little locks of wool underneath. Passing the mid-brain we pause to feast our eyes on the red nut and black stuff; then on to the little-breasted bodies. Moving forwards we come to two hooks on either side of a funnel. We see the reason for the hooks when we pass deep to the pear-like place and discover a sea-horse. If we follow this backwards and upwards we find ourselves, possibly to our surprise, in the brothel. There can be no doubt of this, for behind us we see two soft couches while below and on either side are three more little tummies. We glance fearfully over our shoulders, for we are obviously in the presence of the Id. Hurriedly we retrace our steps to the surface. Here we find a strange trio; a hard mother, a spidery mother, and a loving mother, evidently close associates of the Super-Ego. Treading our way onwards over the bark we come across a hard-skinned body, encircled by a girdle. Could this be a stout and resolute Ego? Passing inwards again we sink down, tired but happy, on the carpet, where we partake, in the light of the pale orb, of a light vegetarian meal of almond nuts, tailed (presumably monkey) nuts, and prunes.

* * *

Once upon a time the governor of a prison was allowed the privilege of releasing one of his prisoners each year. It was his custom to choose the most intelligent prisoner for this honour, but in this particular year there were three prisoners of equal merit. He sent for them, and when they came to his room he showed them three black dots and two white dots which he had cut out of paper. He then made them face the wall while he pinned a black dot to each man's back and destroyed the two white dots. The prisoners, of course, did not know what kind of dot each had on his back. The governor then sent them into the next room and said that the first man to come out and tell him what kind of dot he had on his back and how he had worked it out would have his freedom. Presently one of the prisoners came out with the right answer and the right reasoning to support it. How did he do it? Note: it was all done by logic; no mirrors; no contortions; no violence. I wonder how many peripatetic readers would be able to claim the order for release.

Letters to the Editor

IMPROVED FLOUR

SIR,—Dr. Sheldon and Dr. Yorke last week claim to have demonstrated a syndrome attributable to chemically treated flour, but they have apparently failed to carry out control observations using strictly *untreated* flour. Their control material, called "chemically untreated flour," was subjected to an aeration process which the authors assume to have no modifying effect on the bread protein. This may not be the case, however, if the aeration process used involved mechanical agitation, since high-speed stirring and foaming techniques are known to denature proteins.

Another possible explanation of their findings would be that this patient was suffering from eczema due to sensitivity to wheat protein—a rare but fairly well recognised condition. If this was so, the characteristic properties of the allergen may have been damaged by the physical treatment but not by chemical treatment with agene or chlorine dioxide.

It may perhaps be emphasised that any proposed treatment of flour, or other foods, whether physical or chemical, and whether involving synthetic or natural materials, should be subjected to critical examination as a proper safeguard to the public health.

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University of Birmingham. A. C. FRAZER.

VITAMIN E AND INTERMITTENT CLAUDICATION

SIR,—I have read with great interest the controversial correspondence in your columns on this subject. Dr. Hamilton and his colleagues appear to have fallen into the grave and age-old error of assuming that because they have never seen anything but white swans, therefore all swans are white. "All swans are white" is a null hypothesis, which can never be proved, as the first black swan seen disproves it. The statistical type of experiment can never prove the null hypothesis, but may disprove it.

The null hypothesis in the present controversy is: "Vitamin E is no more effective in relieving intermittent claudication than a control substance." If it can once be shown, as has been done in Professor Boyd's department, that a series of cases treated with vitamin E show a significantly greater improvement than a parallel series of controls, the null hypothesis is destroyed for ever. There is no justification whatever for Dr. Hamilton and his colleagues concluding that vitamin E is of no value in the treatment of intermittent claudication. No amount of experimentation can ever prove or justify such a statement. Professor Fisher has stressed the point I am trying to make:

> "It should be noted that the null hypothesis is never proved or established, but is possibly disproved, in the course of experimentation. Every experiment may be said to exist only in order to give the facts a chance of disproving the null hypothesis."

Insensitive experiments will always tend to confirm the null hypothesis; but science advances by the experimental disruption of null hypotheses, and their replacement by others which in their turn are disrupted by still more sensitive experiments. Nobody who has read the articles from Professor Boyd's department and those of Dr. Hamilton can doubt that the more sensitive experiments have been performed in Manchester.

Articles such as that of Dr. Hamilton and his colleagues with the backing of the Medical Research Council seem to be increasingly fashionable. It is therefore urgent that your readers should appreciate which questions can and which cannot be answered by this type of experimentation. The invalid conclusion that vitamin E is of no value in the treatment of intermittent claudication backed by the authority of the Medical Research Council is, to say the least of it, mischievous; and it may be responsible for practitioners denying a useful treatment to their patients. Let us hope it will not be a hindrance to true research; and that one day, through knowing how to treat some patients now, we may learn to help all.

Flimwell,
near Wadhurst,
Sussex. GEOFFREY E. LOXTON.

CEREBRAL DISEASE DUE TO FUNCTIONING ISLET-CELL TUMOURS

SIR,—The report by Mr. Richardson and Professor Russell [1] is informative and challenging since the effects produced on the central nervous system by prolonged hypoglycæmia due to functioning islet-cell tumours are bizarre and not well understood and may go long unrecognised. The effects may be cerebral, cerebral and spinal, or spinal in location.

Lawrence et al.[2] have reviewed and collated the numerous reports of serious damage to the brain following severe and prolonged hypoglycæmia. Widespread damage both with and without hæmorrhage was found. Characteristic observations were diffuse degeneration and necrosis of nerve-cells with corresponding glial proliferation. In the six brains examined the cerebral cortex, the caudate nucleus, and the putamen were most affected, and the cerebellum less so; the lesions in the remaining centres of the brain-stem were slight. Moersch and Kernohan [3] have reported the occurrence of multiple petechial hæmorrhages or degeneration of some of the cells. In one patient sections from various levels of the spinal cord were normal except in a small part of the mid-lumbar enlargement. In these sections about two-thirds of the nerve-cells of one anterior horn had been destroyed and the cells replaced by proliferation of the glia, especially of the astrocytes.

In the six patients of Richardson and Russell the symptoms suggested widespread damage to the brain with particular reference to the hypothalamus. In four of the five cases that were analysed the accent on the vegetative disorders, such as sweating, pyrexia, tachycardia, flushing, and possible clouding of consciousness, suggested a lesion in the hypothalamus. In the advanced cases in this series, the levels of the glucose in the blood and the response to glucose were not consistent, thus leading to confusion.

Symptoms referable to damage of the cerebrum and the spinal cord have been reported in a patient with prolonged hypoglycæmia manifested by an unusual array of symptoms.[4] The patient had had repeated convulsions, periods of confusion and excitement, ataxia, muscular atrophy, intellectual impairment, and pseudologia fantastica. After the removal of the pancreatic adenoma, all of the abnormalities except the residual muscular atrophy disappeared.

Barris,[5] by his observations on functioning islet-cell tumours, may have cast some light upon the ætiology of progressive muscular atrophy. He points out that, in this group of muscle-wasting states, the anterior horn cells of the spinal cord are the site of demonstrable alteration. Progressive wasting of muscles, muscle fasciculations, increased myotatic irritability, electromyographic evidence of fibrillation, and progressive motor weakness involving chiefly the trunkal and appendicular muscles are seen. Barris has summarised the details of five patients—one previously discussed, three others from the literature, and one of his own.

1. Richardson, J. E., Russell, D. S. *Lancet*, 1952, ii, 1054.
2. Lawrence, R. D., Meyer, A., Nevin, S. *Quart. J. Med.* 1942, **11**, 181.
3. Moersch, F. P., Kernohan, J. W. *Arch. Neurol. Psychiat.* 1938, **39**, 242.
4. Lidz, T., Miller, J. M., Padget, P., Stedem, A. F. A. *Ibid*, 1946, **62**, 304.
5. Barris, R. W. *Ann. intern. Med.* 1953, **38**, 124.

The clinical features of the five patients were identical with the exception of the added cerebral manifestations in the patient previously described. In four of the patients an arrest in the progress of the symptoms and signs occurred with the removal of the adenoma. In the fifth patient, post-mortem examination showed a pancreatic adenoma and severe and widespread degeneration of the anterior horn cells of the spinal cord. Barris points out that to conclude that adenomas of the pancreas are usually responsible for the syndrome seen in progressive muscular atrophy is not warranted. It did seem important, however, to show that sufficient hormonal imbalance or altered hormonal function existed to cause ultimate damage to the anterior horn cells of the spinal cord.

Blau et al.[6] have reported a case which adds to the confusion. The symptoms and signs in this patient were almost entirely of a neuropsychiatric nature and included changes in the psyche and in the central, peripheral, and vegetative nervous systems. The patient suffered from convulsions, parkinsonism, pyramidal signs, ataxia, generalised muscular weakness with myotatic irritability, and sensory changes, and from progressive emotional and intellectual deterioration accompanied by paranoid delusions. During several hypoglycæmic attacks coarse fibrillations were noted in the right forearm. The outstanding features were a persistent Parkinson syndrome and evidence of progressive internal hydrocephalus as shown by several encephalograms. Attention was called to the coexistence of the manifestations of chronic disease of the periventricular nuclei and the constant hypoglycæmic state. The authors were not able, however, to establish whether the disease of the central nervous system or the hypoglycæmia came first.

Also confusing is the fact that spontaneous hypoglycæmia, without a functioning islet-cell tumour of the pancreas, does not necessarily produce the symptoms of hypoglycæmic shock. Hypoglycæmia and hypoglycæmic shock are not the same, nor is the latter always produced by the former.

Practically all patients with hypoglycæmia will have neurologic symptoms. The earlier diagnosis and proper treatment of such patients necessitates that the physician become more conscious of the syndrome due to hypoglycæmia.

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Fort Howard, Maryland, U.S.A. JOSEPH M. MILLER.

MENTAL ACTIVITY IN INFANCY

SIR,—May I comment briefly on the letters last week about my article on mental activity in infants?

It is clearly impossible in a letter to answer all Dr. Doniger's questions; she may care to know that a statistical paper on the work already done has been prepared for publication, and that the Medical Research Council is supporting further research by Dr. William Dunham and myself into the problems of early diagnosis of neurological defect.

The specific points raised by Dr. and Mrs. Bobath are dealt with in the original text of my article. Their statement that mental development depends on physical development as it stands cannot be upheld. If by physical development they mean neural maturation, the relationship between this and mental development is not disputed. There can be no doubt that motor retardation occurs in cases of mental deficiency, though, except in amentia, motor development is, in due time, attained by the mentally deficient child. Indeed, many "therapeutic successes" in such cases are attributable to this process. On the other hand, no useful purpose is served by disregarding the fact that syndromes occurring in the presence of neural defect differ. The purpose of my paper was to show that mental and motor defects both affect physical activity, though in differing ways. The differences are not effaced by indiscriminate application to all abnormalities of the label "release phenomenon."

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OSTEOPATHY

SIR,—I should like to correct any false impression created by Dr. Cyriax's letter last week.

No-one would seek to deny that he has taught "spinal manipulation" to physiotherapists over a period of ten years. The point at issue, it seems to me, is that whereas Dr. Stoddard and the osteopathically trained apply very gentle forces, very strictly localised and guarded, in order to obtain a specific result at a joint, Dr. Cyriax and his adherents indiscriminately mobilise the intervertebral-joint systems by applying uncontrolled torsional forces. I do not seek to suggest that even this may not at times relieve pain; but it can hardly do so by "reducing a displaced fragment of annulus," unless by the process of reductio ad absurdum. The annulus fibrosus is living tissue, not dry friable matter.

In cases of pain due directly to pressure upon nerve-roots—a process caused by: (1) narrowing of the intervertebral distance, from (2) disc-nucleus leakage which may sometimes cause (3) actual pressure on the radix by nucleus pulposus or by annulus-bulging (because of nucleus pressure)—in such cases the radix will suffer from localised inflammatory reaction as a direct consequence of pressure.

In these cases osteopathic methods, of gentle traction followed by specific movement, seek to relieve the pressure by altering the relationship of the affected nerve-root to the compressing factor; relief of pressure will at once allow better drainage, and decongestion. Those of us who use the gentle specific methods of osteopathy would never seek to deny Dr. Cyriax and his trainees their satisfaction in their own manœuvres; rather do we say that we find the gentler methods we have learned effective without that element of uncontrol present in "spinal manipulation."

London, W.1. DONALD TURNER.

INVOLVEMENT OF AUTONOMIC NERVE-FIBRES IN DIABETIC NEUROPATHY

SIR,—It is to be expected that autonomic nerve-fibres are involved in diabetic neuropathy and that this involvement produces changes in the vasomotor reflexes. I think, however, that Dr. Martin (March 21) too readily assumes that he has demonstrated this.

The validity of his investigations depends on the reliability of skin-temperature measurements as a method of estimating skin blood-flow; and unfortunately Lewis's statement (referred to by Dr. Martin) that these are most reliable cannot be substantiated. Fetcher et al.[1] in a most careful study compared the skin-temperature of the finger with the blood-flow of the same finger measured by means of a Goetz plethysmograph. They demonstrated that with an ambient room-temperature of 21°C (comparable to that used by Dr. Martin) there is scarcely any correspondence between finger-surface temperature and changes in blood-flow. In their experiments an increase in finger blood-flow of 400% over a period of 10 minutes (i.e., from 15 to 60 ml. per 100 c.cm. per min.) did not produce any significant change in skin-temperature. These workers concluded that to obtain a good correspondence between skin-temperature and skin blood-flow "the part of the body under investigation must lose heat at a rate of at least 240 K.Cal/hr/M^2."—conditions which can only be obtained in still air at room-temperatures below 0°C.

6. Blau A., Rieder, N., Bender, M. B. *Ibid*, 1936, **10**, 910.

1. Fetcher, E. S., Hall, J. F., Shaub, H. G. U.S. Air Force Memorandum, March, 1949.

Cooper et al.[2] also cast doubt on the reliability of skin-temperature measurements as an estimate of blood-flow, particularly as the skin-temperature approached 32°–34°C. My own investigations comparing the temperature of the skin over the pulp of the big toe with occlusion-plethysmograph estimations of blood-flow show that in normal people at room-temperatures of 20°–25°C a 340% increase in foot blood-flow produces an increase in skin-temperature of only 3°C when measured for 60 min. after warming.

I think most observers agree that except under the conditions described by Fetcher et al. skin-temperature measurements are of no value as an estimate of the degree of vasoconstriction occurring in the skin. Moreover, the temperature changes recorded by Dr. Martin after exposing the patient to room-temperature are in a number of cases he illustrates so small as to be insignificant. It would perhaps be better in any case if Dr. Martin produced reflex vasoconstriction by means of a *sudden* stimulus—e.g., ice on the forehead or pain.

Unless the vasomotor changes in diabetic neuropathy are investigated by means of a flow method it would seem necessary to preserve an open mind on Dr. Martin's conclusions, even though the changes he describes might be expected on a-priori grounds.

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London, W.2. ANGUS MCPHERSON.

HALLUX VALGUS

SIR,—Cathcart [3] and others asked: If footwear is alone to blame, why is it that the feet of peoples who are in the habit of going barefoot so commonly differ from what is regarded as the ideal? This question is still troubling students of hallux valgus. Your correspondent Dr. Booth [4] suggested that W.H.O. should investigate barefoot peoples, and your leading article of Feb. 14 suggests that such work might throw further light on this problem. May we refer to two important works on this subject?

The African expedition by Columbia University and the American Museum of Natural History [5] made the study of feet one of their main objectives. The great thickness of skin is noted: the "negroes sat for some time at a small outdoor fire with their feet resting on live coals." There is a peculiar wrinkling of the skin about the ankles in natives over 40 years of age. There is no hallux valgus, for "where we suffer from arch strains, they lose a toe or two" from injury, chiggers, or yaws! They are notably free from the ordinary types of static foot trouble with which we are familiar in our civilised centres of population.

James [6] in ten years' work in the Solomon Islands found "neither footgear nor flat foot"—only yaws, ulcers, infections, contractures, and loss of toes. He noticed a great difference between shod Europeans on the one hand and unshod Europeans and natives on the other, involving narrowing of the metatarsal region of the foot and lateral displacement of the toe in shod people. This change corresponds closely to Elmslie's [7] description of alteration in 80% of children on beginning to wear shoes.

One of us in the course of four years' work in an Egyptian anatomy school found not a single instance of hallux valgus. The material came entirely from the Fellahin, among whom the men work barefoot, though they may attend the mosque in shoes and leave them at the entrance, while the women seldom wear shoes at all. In the streets, on the contrary, typical valgus was commonly observed in the better-off women wearing shoes of European type whose open-work toes allowed careful observation; deviation of the great toe, bunion formation, and clawing of the other toes were common. In Egypt the distinction between the classes is sharp, and the distribution of valgus follows the class structure.

It seems, then, that footwear can still be blamed for the ordinary hallux valgus of the European adolescent. There are of course other causes, for there is certainly a congenital form, and hallux valgus may also appear rapidly with various forms of arthritis even though the patient is not wearing shoes. Probably these additional factors account for the odd cases of valgus found in unshod Annamites and Transvaal natives mentioned by Hardy and Clapham [8]; and causation by arthritis is consistent with Booth's statement (Feb. 21) that among the barefoot people hallux valgus is found only in adults.

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Department of Orthopædics,
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MITRAL STENOSIS

SIR,—We have read with great interest your annotation of Jan. 10 and the subsequent letters from Dr. Wade (Jan. 24) and Dr. Gorlin (Jan. 31). We would like to comment on Mr. Brock's view that the mitral-valve orifice at operation is always the same size.

Walsh et al.[9] have described quite clearly the evolution of the murmur of pure mitral stenosis following rheumatic fever five or ten years before. The first sign is an early diastolic murmur, to which is added in later years a presystolic murmur. Taking into account Henderson's work on ventricular filling curves, it is reasonably certain that in the earliest stages of mitral stenosis adequate left ventricular filling can be achieved without an increase in left auricular systole. When the stenosis is more severe, the characteristic presystolic murmur appears and flow is maintained for a considerable period until diminished right ventricular competence leads to a fall in cardiac output. This usually occurs when the valve area is in the range 0·9–1·0 sq. cm. It is at this or a later stage that most patients nowadays see the surgeon. In nearly 100 cases of pure mitral stenosis treated surgically, Mr. F. H. Mills has found quite definite variations in the size of the valve orifice which agreed very well with the size predicted from the symptoms and the data obtained at cardiac catheterisation. Moreover, following a good valvotomy the presystolic murmur disappears, and only a diastolic murmur following the third heart sound remains.

In answer to your comment that resting pressures in the pulmonary artery may apparently be nearly normal in the presence of disabling symptoms, it should be pointed out that in the presence of auricular fibrillation, a narrow valve orifice, and a lowered cardiac output, the pulmonary-artery pressure is an unreliable index of the severity of the disease. For reasons which are not entirely clear the onset of auricular fibrillation causes a considerable fall in cardiac output; and as stenosis is almost invariably already severe, it follows from the laws governing mitral valve flow [10] that a fall in pulmonary-artery flow will be associated with a considerable fall in pulmonary-artery pressure. Calculation of the elasticity resistance of the pulmonary vessels in such cases will show that the vasculature is less tense than in the usual case of mitral stenosis, suggesting that it has previously been more distended. A similar state is occasionally found in patients with sinus rhythm, and it is reasonable to attribute it in both cases to diminished right ventricular competence, though congestive failure has not necessarily occurred. Support for this view is found when the patients are exercised, for pulmonary vascular

2. Cooper, K. E., Cross, K. W., Greenfield, A. D. M., Hamilton, D. McK., Scarborough, H. *Clin. Sci.* 1949, **8**, 217.
3. Cathcart, E. P. *Lancet*, 1938, ii, 1489.
4. Booth, W. G. *Ibid*, 1952, i, 1258.
5. Engle, E. T., Morton, D. J. *J. Bone Jt Surg* 1931, **13**, 311.
6. James, C. S. *Lancet*, 1939, ii, 1390.
7. Elmslie, M. *Ibid*, p. 1260.
8. Hardy, R. H., Clapham, J. C. R. *Ibid*, 1952, i, 1180.
9. Walsh, B. J., Bland, E. J., Jones, T. D. *Arch. intern. Med.* 1940, **65**, 321.
10. Gorlin, R., Gorlin, S. G. *Amer. Heart J.* 1951, **41**, 1.

pressures rise precipitously, cardiac output rises very little or not at all, and right auricular filling pressures rise. Although it is recognised that disability in mitral stenosis is not always entirely due to pulmonary vascular distension or diminished right ventricular competence, the exceptions are so few as to be unimportant.

Finally it should be emphasised that mitral incompetence leads to profound changes in the hæmodynamic picture, and unless every precaution is taken to rule it out the correlation between symptoms and the hæmodynamic findings is likely to be unsatisfactory.

Royal Prince Alfred Hospital,
Sydney, Australia. RALPH BLACKET.

BLOOD-GROUPS AND REPRODUCTION

SIR,—Kirk et al.[1] have just published figures showing a highly significant difference in the reproductive pattern of women of blood-groups A and O, and have pointed out that their results are supported, though not on a significant scale, by data of Boorman [2] on 2000 mother-infant combinations. They consider Boorman's data, like their own, from the point of view of maternal age-group, but from this point of view the difference between A and O mothers can be shown to be accompanied by an identical form of difference between AB and B mothers. On the other hand, when the mothers are looked at from the point of view not of age-group but of parity, AB mothers assume the pattern of O and B mothers, and in addition the difference in pattern between A and O mothers appears as less distinct than the difference between A and B mothers. (The numbers are rather too small for a comparison of individual classes.) Similar tendencies can be seen in the associated infants, AB and A infants showing an opposite trend to B and O infants, according to both the age-group and the parity of the mothers, except when one excludes

TABLE I—RATIO OF OBSERVED TO EXPECTED MOTHERS, ACCORDING TO DATA OF BOORMAN, EXCLUDING A MOTHERS OF A INFANTS, O MOTHERS OF O INFANTS, AB MOTHERS OF AB INFANTS, AND B MOTHERS OF B INFANTS

Number of mothers	Group of mothers	Parity of mothers				
		1	2	3	4	5
259	A	0·97	1·01	1·04	1·03	0·66
266	O	1·07	0·92	0·94	1·11	0·83
53	AB	1·07	1·01	0·54	0·66	0·79
103	B	0·98	0·78	1·04	1·40	2·52

the classes A infants of A mothers, AB infants of AB mothers, B infants of B mothers, and O infants of O mothers, in which event the remaining A children assume the pattern of the O and B children. (In 11 of the 14 classes of mother-infant combination the excess or shortage in Boorman's sample agrees with that of the much larger sample of Bryce et al.[3])

Furthermore, when one excludes the four classes mentioned, as in table I, the trend of the ratio of the remaining observed to expected A mothers, according to parity, is seen to be least unlike that of the remaining O mothers and most unlike that of the remaining B mothers. The resulting order of groups—namely, A — O — AB — B—is the same as the descending order of fertility of the mothers who remain in Waterhouse and Hogben's [4] sample of 1239 families with 4139 children when one excludes the mating classes B × B, O × O, A × A, and AB × AB; and when these four classes are excluded the descending order of fertility of all the remaining parents in the Waterhouse-Hogben sample is B father, A mother, AB father, O father, O mother, AB mother, A father, and B mother, the A mother being the only type of mother with a higher than average number of children per family. And further evidence from fertility in support of the belief that A and O are less unlike than A and B in their reproductive characteristics can be seen in table II, which gives the average number of children per family, according to the ABO group of the parents, in a sample of 7700 families with 16,371 children assembled by Hirszfeld [5] from reports published in 1927–33, the overall average number of children per family being 2·13 compared with 3·34 in the Waterhouse-Hogben sample. The average number of children is 1·90 in the 62 AB × AB families and 2·26 in the 1077 A × B and B × A families.

In 2407 of Hirszfeld's families note was made of the sex of the 6547 children as well as of their group, and the ratio of male to female children is 1·16 for B, 1·14 for A, 1·14 for O, and 0·95 for AB. In a sample of 661 families with 1539 children assembled by Hirszfeld and Zborowski [6] from reports published in 1920–24 the ratio

TABLE II—VARIATION OF FERTILITY WITH ABO BLOOD GROUP, ACCORDING TO DATA OF HIRSZFELD (FATHER'S GROUP IS GIVEN FIRST)

No. of families	Types of mating	Av. no. of children per family		Types of mating	No. of families
301	B × B	2·28			
900	B × O + O × B	2·26	2·66	B × AB + AB × B	211
1039	O × O	2·10	2·42	O × AB + AB × O	354
2180	A × O + O × A	2·04	2·18	A × AB + AB × A	401
1175	A × A	1·85			

of male to female children is 1·21 for AB, 1·16 for B, 0·97 for A, and 0·91 for O. (A low sex-ratio in the children of the mating class O father × A mother was remarked on by the authors, and had previously been noted by Dossena.[7]) And in Sanghvi's [8] personal sample of 2194 newborn infants the ratio of male to female infants is 1·33 for B, 1·25 for O, 1·21 for AB, and 0·98 for A. The ratios for the three samples combined are 1·19 for B, 1·12 for O, 1·08 for A, and 1·03 for AB; but the only constant individual feature is the high sex-ratio of the B children. When, however, one excludes, as in table III, B children of B mothers, O children of O mothers, A children of A mothers, and AB children of AB mothers, a second constant feature appears in the low sex-ratio of the remaining O children, the ratios for the three samples combined being 1·19 for B, 1·05 for A, 1·00 for O, and 0·99 for AB. Given the B — A — O descending order of ratios in any one of the samples shown in this table, the same order would

TABLE III—RATIO OF MALE TO FEMALE CHILDREN, EXCLUDING A CHILDREN OF A MOTHERS, O CHILDREN OF O MOTHERS, AB CHILDREN OF AB MOTHERS, AND B CHILDREN OF B MOTHERS

No. of children		Data of Sanghvi		Data of Hirszfeld and Zborowski		Data of Hirszfeld	
Male	Female	Group	M/F	Group	M/F	Group	M/F
575	482	B	1·21	B	1·14	B	1·20
758	723	A	1·07	A	0·98	A	1·06
745	745	O	1·02	O	0·85	O	1·03

occur by chance in both the other samples 1 in 36 times. The difference between the B and A children in the table is consistently greater than that between the A and O children.

Hirszfeld and Zborowski's main purpose was to compare the birth weights of infants of the same ABO

1. Kirk, R. L., Kirk, M., Stenhouse, N. S. *Brit. J. prev. soc. Med.* 1953, **7**, 1.
2. Boorman, K. E. *Ann. Eugen., Lond.* 1950, **15**, 120.
3. Bryce, L. M., Jacobowicz, R., MacArthur, N., Penrose, L. S. *Ibid.* p. 271.
4. Waterhouse, J. A. H., Hogben, L. *Brit. J. soc. Med.* 1947, **1**, 1.
5. Hirszfeld, L. *Ergebn. Hyg. Bakt.* 1934, **15**, 54.
6. Hirszfeld, L., Zborowski, H. *Klin. Wschr.* 1926, **5**, 741.
7. Dossena, G. *Ann. Ostet. Ginec.* 1924, **46**, 335.
8. Sanghvi, L. D. *Nature, Lond.* 1951, **168**, 1077.

TABLE IV—AVERAGE BIRTH WEIGHT, ACCORDING TO DATA OF HIRSZFELD AND ZBOROWSKI

Including the classes A infants of A mothers, &c.		Excluding the classes A infants of A mothers, &c.					
Group of mothers, and av. weight of infants (g.)		Group and av. weight of infants (g.)				Group of mothers, and av. weight of infants (g.)	
A	3230	A	3218	3206	B	3209	A
O	3204	O	3212	3191	AB	3205	B
B	3189	AB	3206	3182	O	3174	AB
AB	3189	B	3189	3180	A	3145	O

group as their mother with those of a different group from their mother. They showed that whilst the average birth weight was 3230 g. for the 371 infants in the four classes with the same ABO group as their mother, the average for the 348 infants whose group was different from their mothers' was only 3187 g. But it can be shown that the average for the 553 infants whose ABO group is the same as, or compatible with, their mothers' is only 3214, whereas for the 166 infants whose blood is not compatible with their mothers' it is 3195. Thus the average difference in birth weight between the ABO-compatible infants and the ABO-incompatible infants in the sample is less than that between the A infants and the B infants, as can be seen on the left-hand side of table IV, and is less still than the difference between the infants of A mothers and the infants of B mothers. The greater difference between the A and B infants remains when one excludes the classes A infants of A mothers (3250), O infants of O mothers (3236), AB infants of AB mothers (3234), and B infants of B mothers (3168), but now the descending order of weights is completely reversed; and this reversal also appears in the remaining infants of B and O mothers. If these differences in the birth weight of A and B infants, and of the infants of A and B mothers, should prove to be real, slight though they are, their explanation might have to be looked for not only in group but also in sex. The sex of the infants discussed was not given.

Aberdeen and North-East of Scotland Blood Transfusion Service, Bacteriology Department, University of Aberdeen.

T. M. ALLAN.

MODERN OUTLOOK ON EPILEPSY

SIR,—Your annotation last week neatly shows the confusion that results from failure to confine the term "petit mal" to attacks associated with 3 cycles per sec. spike and wave in the electro-encephalogram. You remark that troxidone occasionally aggravates petit mal. By this do you mean spike-and-wave attacks, or the much larger body of minor epileptic attacks which may originate from various cortical foci, but usually from those in frontal and temporal regions? Spike-and-wave attacks rarely fail to respond to troxidone, at any rate temporarily; other minor seizures rarely benefit, except myoclonic jerks which are closely related electro-physiologically. Surely such a condition as petit mal is worthy of a separate name, since it is distinct in ætiology, pathophysiology, treatment, prognosis, and (usually) clinical picture?

I should also welcome an authoritative opinion from blood-dyscrasia experts on the prognostic value of routine blood-counts for the detection of impending agranulocytosis from cytotoxic drugs. I have seen a neutrophil-count fall to 4% of a normal total white-cell count, and return two days later to a more usual figure without any change in the dose of troxidone. With other toxic drugs, agranulocytosis has been reported to occur within a few hours of apparently normal blood-counts. Warning the patient and his local doctor of possible serious symptoms such as sudden inexplicable fever, rash, malaise, or sore throat would seem safer than false reliance on a laboratory investigation, which is often inconvenient for the patient, who must attend hospital for it, and time-consuming for the clinical pathologist.

Department of Clinical Neurophysiology, Institute of Psychiatry, Maudsley Hospital, London, S.E.5.

D. A. POND.

*** We are obliged to Dr. Pond for drawing attention to a mistake. We did not intend to state that troxidone may aggravate petit mal. Our comment that this and kindred drugs "may aggravate petit mal and even apparently produce grand mal" should have read "may aggravate and even apparently produce grand mal."—ED. L.

A DESIGN FOR FAMILY PRACTICE

SIR,—Extra fees are paid to general practitioners in the National Health Service who do obstetrical work. In his article last week Dr. Howard points out that other family doctors with special experience are also doing special work in their practices—pathological, E.N.T., &c.—and he hopes that in time they too may be rewarded. He suggests that the College of General Practitioners "tackles this anomaly."

This matter is one of many, involving terms and conditions of service, that are being investigated by the General Medical Services Committee of the B.M.A., and *not* by the College of General Practitioners, which will confine its activities to the academic field.

J. H. HUNT

14, Black Friars Lane, Queen Victoria Street, London, E.C.4.

Hon. Secretary, College of General Practitioners.

POLIOMYELITIS

SIR,—In your leading article of Jan 10 you state that there are considerable differences of opinion on some aspects of poliomyelitis and you then go on to quote at length Dr. Ritchie Russell's views on the management of the acute phase.

Much discussion has ranged around the subject of "muscle spasm." In the past, British neurologists of distinction have denied the very existence of muscle spasm and yet have agreed that the signs of so-called "meningeal irritation" are a common feature of the disorder.

To one who believes that "muscle spasm" is an almost constant feature of acute poliomyelitis there is no difference between the muscle spasm that may occur in, say, a pectoral group of muscles and the tightness and spasm of the muscles of the neck, back, and hamstrings that make up the signs of so-called "meningeal irritation." In each case there is muscle tightness, and on stretch muscle spasm develops. In a recent small epidemic of forty-four cases in Dunedin, muscle tightness and spasm has again been an outstanding feature of the majority of cases.

It is refreshing to see that rigid splinting is at last banished. There is, however, still an important place for splintage without restraint, which is well achieved by nursing the patient on a firm mattress with the feet supported against a board which is placed six inches from the end of the mattress. Rotation of the tibial shaft, which is one of the most difficult of deformities to correct on account of the short iliotibial band, may be prevented by two movable boards which project back from the foot-board and prevent outward rotation of the feet.

In New Zealand most workers who have had experience with the last four epidemics of poliomyelitis favour the use of hot packs and hot baths, which relieve discomfort and pain, overcome muscle tightness and muscle spasm, and maintain the skin and muscles in good condition to prevent or correct deformities. Furthermore, in many instances pseudo-paralysis of tightened intercostals or other muscle-groups may at times be dramatically

relieved by hot packs. We do not believe that the mere relief of pain with analgesics is enough. It has never been seriously suggested that the life of a nerve-cell has ever been saved by the use of hot packs. On the other hand many patients have been saved from crippling deformities and on occasion from the respirator by the use of hot packs.

Dr. Russell suggests that muscle shortening is best countered by passive movement. In our experience tightened muscles cannot be adequately stretched without hot packs or hot baths. If tightened muscles are stretched without previous packing, pain is induced and the muscle tightness and protective spasm may be aggravated.

I must disagree with Dr. Russell on the matter of re-education. At all cost the correct pattern of posture and walking should be maintained and trick movements avoided. It is only by the maintenance of a normal correct pattern of movement that residual unaffected muscle-fibres can be correctly exercised and encouraged to hypertrophy.

Finally I disagree, too, on the early introduction of active vigorous movement to a point of fatigue. In our experience this will often reactivate muscle tightness and spasm and induce deformities.

University of Otago,
Dunedin, New Zealand. J. E. CAUGHEY.

POLIOMYELITIS IN DENMARK

SIR,—We should like to comment on one or two points in Dr. Ritchie Russell's letter (March 14) where we consider that he is seriously in error.

1. "In this regard we lag behind American practice which has long ago devised methods for dealing with the type of case which caused so much trouble in Copenhagen." It is very unlikely that any European group had a greater knowledge of this "American practice," but the hard fact is that these methods were ineffective in dealing with the problem that confronted Professor Lassen and his colleagues. The Danish practice seems to us to contain certain features which are an advance on previous methods of management—even in theory—and, moreover, it has been shown to work. One suspects that, as in other fields, an ounce of practical experience is worth a vast amount of theorising. The apparent ease with which Dr. Russell finds that postural drainage in the prone position copes with the pure bulbar case makes one wonder what all the bother is about. How simple it all is—in theory! Unfortunately, in practice so many cases fail to present themselves as "pure" that generalisations tend to be dangerous.

2. "Cases with true respiratory paralysis of severe degree must, of course, be clearly distinguished and require different treatment which I shall not refer to here." Does Dr. Russell appreciate that many of the Danish cases were of this type and that it is the ability of their method to deal with them in a highly satisfactory way that is so impressive? Indeed, not the least impressive aspect of a visit to Blegdams Hospital is the obvious comfort—one might almost use the word happiness—of the patient.

3. Dr. Russell's remarks regarding the "mechanical student"[1] also seem to betray a lack of understanding of the problem. Many people have devised valves of one kind or another, but most of them are inapplicable to the Danish method of treatment. What is required is something that can follow and augment the patient's own inadequate voluntary respiration; and which causes minimal interference with venous return from the lungs and with cardiac output.

We believe that the Danish workers have made an important advance in the technique of handling this difficult type of case. Those of us who are concerned with the management of poliomyelitis—and some of us have acquired a fair degree of experience in the past twenty years considering the small numbers of cases normally encountered in this country—are constantly endeavouring to improve our techniques. One suspects that, no matter what the extent of previous study, it is when one has actually dealt with the kind of experience that Copenhagen has had that one looks back and says: "As a matter of fact, when the thing started we really knew nothing." There is wisdom in regarding one's theoretical knowledge with due humility.

Department of Infectious Diseases,
University of Glasgow. THOMAS ANDERSON
JAMES H. LAWSON.
H. H. PINKERTON.

Fazakerley Group of Hospitals,
Liverpool. A. B. CHRISTIE
J. R. ESPLEN.

1. Christie, A. B., Esplen, J. R. *Lancet*, March 7, 1953, p. 492.

PERMEABILITY OF NATURAL MEMBRANES

SIR,—May I take up a point in your kind review[1] of the book on *Permeability of Natural Membranes* by Dr. Davson and myself? You correctly state that we have not attempted to survey recent work involving isotope studies and the effect of cell metabolism on the distribution of ions. We agree that such a survey should be made as soon as possible, and we also agree that since the first edition of the book in 1943 there has been "a considerable shift of emphasis in our whole way of thinking about the distribution of ions; the properties of the membranes themselves are less emphasised and more importance is attached to active processes."

While this is true, the reason for such emphasis not being placed upon the membranes themselves is that at present we have extremely little idea of how active transport mechanisms are incorporated in cell membranes. At present, views in this field are in an extremely fluid state. Each year sees one or more new theoretical approaches. There would be no justification in writing a textbook in the field of active transport until an adequate theory of the relation between cell metabolism and membrane properties can be established.

King's College,
London, W.C.2. J. F. DANIELLI.

SPONTANEOUS RUPTURE OF JEJUNUM

SIR,—I was interested in Mr. Frederick Smith's report (Feb. 28, p. 421) of a case of spontaneous rupture of the proximal jejunal loop as a late complication of gastrectomy. Last year I had a similar case, but the rupture occurred on the twelfth postoperative day.

On July 7, 1952, a man, aged 52, underwent an anterior Polya isoperistaltic partial gastrectomy. He gave a long history of indigestion culminating in a fairly profuse hæmatemesis. He made good progress after the operation and was up and about the ward from the fourth day onwards

On July 18 he had some nausea and vomited small amounts of fluid. This persisted next day; a Ryle's tube was passed, and hourly aspirations brought considerable relief. A rectal drip was also set up. During the same night his abdominal pain became very severe, and early on the morning of July 20 he collapsed. The abdomen became rigid and tender with all the signs of a perforation. At no time was a swelling felt in the abdomen.

After resuscitation, laparotomy revealed that the peritoneal cavity was full of free fluid. The afferent jejunal loop could not be seen at first because it had passed to the left behind the distal loop, and actually lay a little to the left side of the distal loop. It still showed some distension, and fluid was pouring from a linear perforation, $^3/_4$ in. long, situated about $^1/_2$–1 in. distal to the duodenojejunal junction. The linear character of the perforation was particularly noticed at the time.

The perforation was repaired, and the loop restored to its proper position and fixed by sutures to adjacent structures. A Ryle's tube was then guided from the stomach down the proximal loop to ensure that it could be kept decompressed by aspirations. A second Ryle's tube was left in the stomach.

Convalescence was stormy at first, but complete recovery followed. Three months later he was fit and had had no complications.

At the operation the trouble was thought to have been due to rotation of the stomach, carrying the proximal loop behind the distal one and causing an obstruction at the duodenojejunal flexure and at the anastomosis of this loop with the stomach. Presumably, the closed loop thus formed became grossly distended without being detected, and finally ruptured.

1. *Lancet*, 1952, ii, 1210.

Since this experience an attempt has always been made at the end of an antecolic partial gastrectomy to anchor the afferent limb in its proper position with a few sutures so that rotation cannot take place.

Dartford, Kent. J. C. MORRIS.

ADVERTISEMENTS

SIR,—I have just received from a commercial firm a large and well-printed volume on an antibiotic: on it are to be found neither the name nor the qualifications of any editor or author. This prompts me to draw your attention to a pernicious trend in medical education.

Are medical practitioners to learn of recent advances in knowledge from the leaflets and advertisements of manufacturers selling their wares? The very success of treatment of bacterial and viral diseases, in which this country was a pioneer, has led to a neglect of the teaching of bacteriology. No-one denies the rôle that the manufacturers of antibiotics have played to the benefit of mankind—and no less to their own benefit—in placing these new drugs in the hands of medical practitioners, but I do feel that it would be fair and just if a greater part of their financial reward was turned into further medical research.

I most strongly urge that manufacturers spend at least part of their profits on financing research projects in universities and other suitable establishments—*not* in their own laboratories where a bias could be suspected. In the United States of America such support is producing a wealth of fresh and rewarding research, whereas in this country the main results appear to be tons of coloured paper.

Department of Bacteriology,
St. George's Hospital Medical School,
London, S.W.1. S. D. ELEK.

SIR,—The general practitioner of today comes under the influence of advertisements by the manufacturers of drugs. The quality of this influence is an important matter, for the present position in medical research is such that advances in drug therapy come mainly from the manufacturers, and contributions from the universities are usually indirect. The universities cannot compete financially, and this state of affairs need not be considered humiliating. But the attitude of the manufacturer towards the general practitioner deserves some criticism.

The advertiser often gives a fanciful name to his preparation and, in very small print, the organic formula. The fanciful name is repeated again and again throughout the advertisement. If I want to obtain some isonicotinic acid hydrazide, it is that substance, by that name, that I ask for at the chemist's. A preparation by any reputable firm will satisfy me, and I am not in the least impressed by the many odd names which have been given by manufacturers to the same substance. It is right that the formula should be given, but it should be remembered that most practitioners have no detailed knowledge of organic chemistry, and that a simple indication of the nature of the product would be helpful—for example, a statement that the preparation is the synthetic analogue of a drug whose nature is well known.

It is astonishing to see a full-page advertisement extolling the virtues of a preparation, without mentioning its ingredients. It is indeed humiliating if the medical profession is expected to use secret remedies.

Advertisements are now very important to the general practitioner, and it is to be hoped that in time they will become more helpful. Advertisers should remember that, while the practitioner is not an organic chemist, he is not impressed by high-sounding names, which confuse him, nor by formulæ which he does not understand, and that he is irritated by the oppressive repetition of a trade name without an adequate statement of the nature of the preparation.

Mombasa, Kenya. R. L. LANCASTER.

Obituary

JOSEPH BARNES BURT
M.D. Lond.

Dr. J. Barnes Burt, who died at his home in Bath on March 18 at the age of 72, was one of the last of the old order of balneologists, and he had made the rheumatic diseases his special study.

He was born at Kendal, the son of Dr. J. K. Burt, and was educated at Epsom College and University College Hospital, London, where he qualified in 1902. He held a research fellowship at Cambridge before going to Buxton, where he was physician to the Royal Devonshire Hospital for twenty years. In 1935 he moved to Bath and joined the staff of the Royal National Hospital for Rheumatic Diseases. Among his many appointments he was the first president of the section of physical medicine of the Royal Society of Medicine, when the sections of balneology and electrotherapy were amalgamated. For many years he was also chairman, and later vice-president, of the International Society of Medical Hydrology. Through these activities he was well known and held in great respect by hydrologists and rheumatologists on the Continent, where he travelled extensively. He wrote many papers, especially on balneotherapy, sciatica, and gout. He retired in 1948.

Outside medicine Dr. Burt had many interests; and he was a councillor of the city of Bath. He collected prints, water-colours, stamps, and etchings, and he was himself an etcher of considerable merit. Golf was his main outdoor recreation.

G. D. K. writes: "Barnes Burt was a great individualist and was always ready to fight for what he considered right, even when this did not coincide with his own interests. He was always open to conviction, ready to learn and to admit when he did not know. A kind, considerate man, he was much loved by his patients and colleagues. The young man who needed help and encouragement was one of his first thoughts at all times, but he had no use for slackers."

He leaves a widow, a daughter, and two sons, one of whom is Dr. Hugh Burt.

LIONEL GODFREY PEARSON
F.R.I.B.A.

Mr. Lionel Pearson, who died on March 19 at the age of 73, as a member of the architectural firm of Adams, Holden, and Pearson, was largely responsible for planning many of the hospitals built between the wars. They included the Westminster Hospital, the Royal Westminster Ophthalmic Hospital, the new Mineral Water Hospital, Bath, and the Southend Hospital.

"Though Lionel Pearson was not a doctor," writes E. R. C., "many in the medical profession will feel that they have lost a colleague. The staffs of half a dozen hospitals now in being, and of at least three in prospect, have been indebted to an architect who, though an artist to the finger-tips—or rather because he was first and foremost an artist—was intensely aware of the need for a functional approach to design. He never thought of a building as a monument to his own skill. What he set out to do was to throw an artist's glamour over a building that contained all the space, all the accessibility, all the convenient arrangements necessary for good professional work.

"No trouble was too much for him to take over a thorough understanding of what the doctors, the nurses, the technicians, the administrators wanted and why. It was the same with the different requirements for teaching and research. It was hard work sometimes for a man who loved beauty and form to curb his passion for material and colour within the limits of possible cost; and how he enjoyed himself when there was a chance to have his way! Witness the Chapel in the Westminster Hospital, so soon after completion to be the target of a bomb.

"But it was not only as an architect that his colleagues loved him. Shy, modest, generous-minded, he was a charming and stimulating companion: transparently a man of complete integrity: a friend whose passing leaves a gap that cannot be filled."

JAMES EDWARD HILL SAWYER
M.A., M.D. Oxfd, M.R.C.P.

Dr. J. E. H. Sawyer, who died on Feb. 22 at his Sussex home at the age of 78, had close ties with the Birmingham medical school, where his father, Sir James Sawyer, was physician to the Queen's Hospital and professor of medicine at Queen's College. He was educated at Shrewsbury School, Christ Church, Oxford, and St. Thomas's Hospital. At St. Thomas's he won the Solly and Bristowe medals and the Hadden prize. He qualified in 1900, and three years later proceeded to the D.M. and M.R.C.P.

In 1906 he was appointed casualty assistant physician to the General Hospital, Birmingham, becoming assistant physician in 1914. He was also physician to outpatients at the Children's Hospital and assistant to the chair of medicine. He published articles on cardiac and cerebral disease; he contributed to French's *Index of Differential Diagnosis*, and for a time he edited the *Birmingham Medical Review*.

In 1908 he joined the Territorial Army as registrar of the Birmingham military hospital; and he received the 1911 Coronation medal. During the 1914–18 war he was registrar and later administrator of the 1st Southern General Hospital, which was established in the buildings at Edgbaston of Birmingham University. In 1917 he became brevet lieut.-colonel. At the end of the war he decided that he would not resume his work as a consulting physician and he retired to Burwash in Sussex. In the last war, until he reached his 70th year, he served as a captain in the Home Guard.

Mrs. Sawyer, to whom he was married in 1906, is the daughter of the late Lieut.-Colonel C. W. Longstaff. She survives him with a daughter and three sons.

Births, Marriages, and Deaths

BIRTHS

BREARLEY.—On March 17, at Mill Road Hospital, Liverpool, to Joyce Mary (née Hewitt) and Roger Brearley, F.R.C.S., of 55, Meadow Lane, West Derby, Liverpool,—a son.

LE VAY.—On March 15, at Woolwich Memorial Hospital, to Dr. Marjorie Le Vay, wife of Mr. David Le Vay, M.S.—a son (Benedict).

MORGAN.—On March 9, at Jacksonville, Florida, U.S.A., to Mildred, wife of Mr. Bernard L. Morgan, F.R.C.S.—a daughter (Lesley Cynthia).

MARRIAGES

NEWNS—CHRISTMAS.—On Feb. 28, in Norwich, George Reginald Newns, M.B., M.R.C.P., to Patricia Mary Christmas, M.C.S.P.

DEATHS

BURT.—On March 18, at 5, Springfield Place, Bath, Joseph Barnes Burt, M.D. Lond., aged 72.

Diary of the Week

MARCH 29 TO APRIL 4

Monday, 30th

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E.1
5.15 P.M. Dr. T. H. Whittington: Myopia and the Care of the Myopic Patient.

HUNTERIAN SOCIETY
8.30 P.M. (Talbot Restaurant, 64, London Wall, E.C.2.) Dr. Keith Simpson, Dr. Robert Forbes, Dr. D. C. Norris: Professional Pitfalls.

Tuesday, 31st

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. D. O'Neill: Diagnosis and Management of Stress Disorders of the Skin.

Wednesday, 1st

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Section of History of Medicine.* Major J. B. Neal: Two Reformers of Royal Army Medical Service—Sir William Muir and Sir William Taylor (Part I). Dr. John Keevil: Leonard Gillespie (1758–1842), Naval Surgeon and Physician to Lord Nelson.

INSTITUTE OF UROLOGY, St. Paul's Hospital, Endell Street, W.C.2
5 P.M. Dr. W. N. Mascall: Diagnosis and Treatment of Gonorrhœa.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. (University of Manchester.) *Section of Medicine.* Prof. R. E. Lane: Our Dilemma. (Presidential address.)

Notes and News

SENIOR REGISTRARS

THE Joint Consultants Committee has made fresh representations to the Ministry of Health on behalf of those senior registrars whose appointments are being terminated and for whom there are no suitable openings in hospitals or elsewhere. The Ministry is collecting figures from the regions with a view to ascertaining the exact extent of the problem, but the information received is not yet complete. The Joint Consultants Committee has protested at the delay and has received an assurance that the figures will be passed on to it as soon as they are available. It is hoped that the committee will be in a position to resume the discussions with the Ministry in the near future.

REACTION TO THE IRISH HEALTH BILL

THE Irish Medical Association on March 18 unanimously rejected the Health Bill now before the Dail, and set up a defence committee to devise means of defeating the government's proposals. The Irish News Agency reports that Dr. A. McCarthy, chairman of the central council, declared that the association would refuse to coöperate if the Bill became law; reports from branches and groups were unanimously against the measure. The association, he added, had a membership of 2200, representing 90% of the doctors in Eire, and whatever scheme was brought in would have to be worked by the doctors. They had the power in their hands, and what was needed was the determination and courage to use it.

Under the Bill [1] local health authorities would be given the power and duty to provide an extended health service outlined last year in a white-paper.[2] The proposals call for the transfer to local authorities of responsibility to provide general health services for the lower-income group; and a hospital service for both lower and middle income groups will be based on local-authority hospitals. The association's objections to the Bill have been summarised as follows: (1) that it contains in essence State control of the medical profession; (2) that under it the State must enter unduly and very intimately into the lives of patients and of doctors; (3) that to implement it the whole community must be heavily taxed independently of the necessity or desire of the citizens to use the facilities that may be provided; (4) that its implementation by direct or indirect taxation would morally compel the citizens to avail themselves of the services; and (5) that under it the State must have recourse in great part to ministerial regulations as distinct from enactments of Parliament.

ANGLO-DANISH SANATORIUM SCHEME FOR BRITISH CHILDREN

UNDER a scheme inaugurated by the Anglo-Danish Society and the National Association for the Prevention of Tuberculosis, 50 British children were sent last year to a Danish sanatorium for several months' treatment. For 1953 sufficient funds have been raised by the societies concerned to send up to 100 children; and the first party left this country on March 19 for Vordingborg Sanatorium, South Zealand. Cases are selected by a committee of the N.A.P.T. from recommendations made by chest physicians and pædiatricians. Since the scheme started, the British Red Cross Society have provided a welfare officer to stay with the children and keep in touch with their parents, and now an English teacher is also being appointed.

BRITISH ASSOCIATION OF SPORT AND MEDICINE

FORTY-EIGHT members attended the first general meeting of this association, which was held at the Westminster Hospital Medical School on Feb. 27. Sir Adolphe Abrahams, the president, describing the aims of the association, said that he hoped that it would become the authoritative body on every medical aspect of athletics and exercise. It should, in his view, advise on the general principles of athletic training and the medical conditions which would and would not prohibit participation in sport. It would have to study the inevitable injuries of sport, the effect of violent exercise during the incubation period of poliomyelitis and other infections, and the dangers of boxing. The fitness of women and girls

1. See *J. Irish med. Ass.* March, 1953, p. 72.
2. Department of Health: Proposals for Improved and Extended Health Services. Dublin, 1952. See *Lancet*, 1952, ii, 581.

to take part in vigorous exercise also needed further investigation. He suggested that the association might well sponsor research into such subjects as the biopsy of the muscles of athletes. Was the pre-eminence of the negro race in sprinting and jumping attributable to some special contractility or viscosity of their muscles? Much work had already been done on the biochemistry of the products of fatigue, but in his opinion something more searching was desirable, and he looked to the biochemist of the future to isolate some factor other than mere quantitative superiority.

The secretary of the association is Dr. W. S. Tegner, London Hospital, E.1.

THE SHIP THAT GOES

THE pirate captain, Mary Lovell, sailed a ship called *Moonraker*. When Dr. E. A. Pye and his wife, Anne, bought the *Lily* for £25 they renamed her *Moonraker*, without changing her luck. "She was twenty-nine feet long by nearly ten feet beam and she drew six feet aft, when loaded down with gear." Dr. Pye had a duodenal ulcer, a love of sailing, and a practice; but the moment they had bought this boat only the second seemed important. So they sold up everything and sailed her away from Fowey to the West Indies and back; and in his book, *Red Mains'l*,[1] he takes us with him on the cruise. It was dangerous and exciting and boring and beautiful by turns, and those who love a seafaring life will find the book a siren song to lead them from their lives and homes out upon blue water. Dr. Pye's style is so economical and vivid that at first it seemed he might have Kipling's gift, displayed to advantage in *The Devil and the Deep Sea*, of drawing the outsider into another craftsman's mysteries, and making him burn with shared zeal and curiosity. He has not, in fact, quite this gift; but he tells his tale unaffectedly and well, and he looks about him in strange places and gives a brisk report.

SHIP'S SURGEON AT LARGE

Richard Gordon has followed up his story of life in a medical school [2] with an account of life at sea,[3] and in the red-light areas of South American ports, from the viewpoint of a newly qualified doctor in the Merchant Service. It is life in the raw and in not too good a ship. The incidents are mostly characteristic of seamen and rarely incredible, and all are funny. Any newly qualified doctor thinking of a job on board ship should read this book first as a warning. But if the experience was not without its trials, the author has no doubt of its value:

"I had found for the first time that the world isn't divided simply into two classes—doctors and patients. Three months at sea had taught me more than six years in a medical school. I had learned to give and take toleration, to grapple with grotesque predicaments, to appreciate there is some goodness behind everybody, that life isn't really so serious, and that doctors aren't such bloody important people after all."

CATALOGUE OF MEDICAL FILMS

THE medical committee of the Scientific Film Association plans to publish a supplement to its catalogue of medical films which was issued last May. The owners or distributors of films, not included in this catalogue, which are available for loan to medical audiences are asked to send details to Dr. Michael Essex-Lopresti, c/o the Association, 164, Shaftesbury Avenue, London, W.C.2.

University of Sheffield

Dr. A. H. Cameron has been appointed lecturer in pathology.

University of Leeds

Mr. Herbert Agar has been appointed honorary demonstrator in anatomy, Dr. F. G. W. Marson lecturer in the department of medicine, and Dr. R. L. Langley honorary lecturer in the department of pædiatrics and child health.

University of Birmingham

Sir Harold Himsworth, secretary of the Medical Research Council, will give the address at the inaugural meeting of the next session to be held on Oct. 5. Sir Harold will open the new block, now nearing completion, for clinical teaching and research.

1. London: Herbert Jenkins. Pp. 199. 15*s*.
2. Doctor in the House; see *Lancet*, 1952, i, 829.
3. Doctor at Sea. London: Michael Joseph. 1953. Pp. 219. 10*s*. 6*d*.

University of Dublin

At a recent examination the following gained the diploma in gynæcology and obstetrics:

James Abraham, Indumati Balaram Adarker, Nilratan Adhya, Salar Akhtar Aziz, Harbans Bahry, Dinabandhu Bandyopadhyay, Satyendranath Basu, Ghulam Bheek, Ralph Anthony Boland, Gauripati Chattopadhyay, Praphullachandra Chaudhuri, Alaknath Dhol, Baidyanathbaran Ghosh, Din Hassan, Tehmi Dossabhoy Kapadia, Jayatissa Ediriwanna Mohotti, Madhu Somabhai Patel, Harrihar Jang Bahadoor Pershad, Asrukumar Ray, Prakaschandra Ray, Sachischandra Ray, Henry Carson Stevenson.

British Association of Physical Medicine

The annual meeting of this association will be held on April 17 and 18 at University College Hospital Medical School, London, W.C.1, under the presidency of Lord Horder. Further particulars may be had from the secretary of the association, 45, Lincoln's Inn Fields, W.C.2.

Faculty of Anæsthetists

At the anniversary dinner, held on March 18 at the Royal College of Surgeons of England, Dr. Bernard Johnson, the dean, announced that John Wyeth Brothers of New York had given the faculty £5000 to be used for scholarships for overseas students. Mr. Iain Macleod, the Minister of Health, proposed the toast of the Faculty. The health of the Guests was given by Dr. T. C. Gray, the vice-dean. Mr. A. A. Gemmell, F.R.C.O.G., and Mr. L. Farrer-Brown, secretary of the Nuffield Foundation, replied.

Royal Sanitary Institute

The health congress of this institute will be held at Hastings from April 28 to May 1, under the presidency of Lord Eustace Percy. Dr. B. E. Schlesinger is to be president of the section on maternal and child welfare; Prof. James McCunn, M.R.C.S., of the section of veterinary hygiene; Dr. Charles Wilcocks of the section of tropical hygiene; Dr. Andrew Meiklejohn of the section of occupational health. Further particulars may be had from the secretary of the institute, 90, Buckingham Palace Road, London, S.W.1.

Institute of Almoners

At the jubilee dinner on March 14, the health of the institute was proposed by Sir Russell Brain, F.R.C.P. Other guests included Dr. Hugh Clegg, editor of the *British Medical Journal*, Mr. L. Farrer-Brown, secretary of the Nuffield Foundation, and Prof. Andrew Topping, F.R.C.P., dean of the London School of Hygiene and Tropical Medicine. The company were received by Prof. Alan Moncrieff, F.R.C.P., chairman of the institute, and Miss E. C. Warren, vice-chairman.

Respiratory Diseases and Industry

Dr. Peter Edwards, superintendent of the Cheshire Joint Sanatorium, Market Drayton, will speak on this subject at a buffet-lunch meeting to be held by the Industrial Co-Partnership Association on Tuesday, March 31, at 12.30 p.m., in the hall of the Royal Empire Society, Northumberland Avenue, London, W.C.2. Applications for tickets (5*s*. 6*d*.) should reach the office of the association, 36, Victoria Street, S.W.1, not later than March 29.

Joint Tuberculosis Council

A report on the work of the council during 1952 refers to the forthcoming publication of a revised version of a report issued in 1948 on the protection of organised groups of children from the risk of infection by adults suffering from tuberculosis. The council's representatives on the British Student Tuberculosis Foundation have continued to take an active interest in the establishment and development of that body. The council also has continued its close association with the National Association for the Prevention of Tuberculosis on the Tuberculosis Educational Institute, and it is represented on the British Council for Rehabilitation, the Scientific Film Association, the Tuberculosis Rehabilitation Council, and the tuberculosis and pregnancy subcommittee of the National Birthday Trust Fund. Believing that the time is ripe for full consideration of the changing character of tuberculosis, the council has set up a committee to consider the best way in which this may be done. The officers of the council during the year were: chairman, Dr. Peter Edwards; vice-chairmen, Prof. F. R. G. Heaf and Dr. J. E. Geddes; hon. treasurer, Dr. Norman England; and hon. secretary, Dr. R. L. Midgley.

Whipps Cross Hospital Medical Society

At a meeting of this society to be held at 8.30 P.M., on Friday, April 10, at the hospital, London, E.11, Prof. S. P. Bedson, F.R.S., will deliver a lecture on Recent Trends in Virus Research.

Committee on Disablement

The thirteen members of the committee which the Minister of Labour has set up to consider the problems of the disabled include Sir Claude Frankau, F.R.C.S., and Dr. C. G. Magee. The chairman is Lord Piercy.

World Health Day

On World Health Day, which is to be celebrated this year on April 7, a meeting is being held by the United Nations Association at the Caxton Hall, Westminster, S.W.1. The speakers will include Mr. Iain Macleod, the Minister of Health, and Dr. H. S. Gear, assistant director-general of the World Health Organisation.

Central Council for the Care of Cripples

The annual general meeting of this council will be held at the Cowdray Hall, Henrietta Place, Cavendish Square, London, W.1, on Friday, April 10, at 11.30 A.M. Miss Patricia Hornsby-Smith, parliamentary secretary to the Ministry of Health, will address the meeting.

International Congress of Gynæcology and Obstetrics

Prophylaxis in Gynæcology and Obstetrics has been chosen as the main theme of this congress which is to be held at Geneva from July 26 to 31. Further information may be had from the secretariat of the congress, Maternité, Geneva, Switzerland.

Hertford Hospital, Paris

On March 18 it was announced that owing to financial difficulties this hospital, which has served the British colony in Paris for eighty years, will have to close. A gift of £35,000, which was made last year for rebuilding and re-equipment, has been reluctantly withdrawn by the donor, Sir Bernard Docker.

Visits to Children in Hospital

At a meeting of the Leeds Regional Hospital Board, reported in the *Manchester Guardian* of March 13, Dr. G. W. Black said that 10 hospitals in the region allowed daily visiting in children's wards, 8 allowed daily visiting in emergencies, 64 allowed regular visiting, and 6 banned visiting. He hoped that the 6 would reconsider this rule. Prof. P. J. Moir, consulting surgeon to the United Leeds Hospitals, did not share this view. "I think there is a lot of sloppy sentiment talked about this," he said. "If children are left alone for a day or two they forget their parents. The hours in hospital after the visits of parents are chaotic. The children all cry and shriek and will not go to sleep."

Problems of Virology

A symposium on this subject will be held on May 22 and 23 at the Institut d'Hygiéne et de Bactèriologie, Lausanne; the speakers will include: Professor Flückiger (Foot-and-mouth disease), Professor L'Héritier (Hereditary Virus of Drosophila), Dr. Cateigne (Influenza), Dr. Kenneth Smith (Polyhedral Virus Diseases of Insects), Professor Verge (Virus Diseases of Animals), Dr. Klieneberger-Nobel (Organisms of the Pleuropneumonia group and the L Phases of Bacteria), Professor Hauduroy (the Sleeping Viruses), Professor Lépine (Poliomyelitis), Professor Penso (Aggression and Demolition of the Bacterial Cell by the Phages). Further information may be had from Professor Hauduroy, 19, rue César Roux, Lausanne, Switzerland.

International Hospital Congress

Preventive Medicine as a Major Function of the Hospital and its Implication has been chosen as the central theme of this congress, which is being held in London this year at Church House, Westminster, from May 25 to 30. The chairman of the congress is Dr. René Sand, president of the International Hospital Federation, and the speakers will include: Prof. H. W. C. Vines; Prof. G. Sollazzo, medical director of the Nuovo Ospedale Maggiore, Milan; Dr. E. L. Crosby, president of the American Hospital Association; and Prof. G. Portmann, dean of the faculty of medicine, Bordeaux. Further particulars may be had from Captain J. E. Stone, hon. secretary of the International Hospital Federation, 10, Old Jewry, London, E.C.2.

Auxiliary Royal Army Medical Corps Funds (1939)

The annual general meeting of the Funds will be held at 11, Chandos Street, London, W.1, on Monday, April 13, at 5 P.M.

British Standard for Patients' Trolleys

A new British standard (B.S.1962 : 1953) has been issued for patients' trolleys (fixed top) for indoor use in hospitals. Copies (2*s.* 6*d.*) may be obtained from the British Standards Institution, Sales Branch, 24, Victoria Street, London, S.W.1.

Wessex Rahere Club

The spring dinner of this club will be held at the Castle Hotel, Taunton, on Saturday, April 18. Membership of the club is open to all Barts men practising in the West Country. The hon. secretary is Mr. A. Daunt Bateman, 3, The Circus, Bath.

Hæmatology Congress

The fourth congress of the European Society of Hæmatology will be held in Amsterdam from Sept. 8 to 12. The subjects chosen for discussion are: Immuno-hæmatology; Erythropoiesis and Hæmoglobin Metabolism; Acute Leukæmia; and Physiology and Pathology of Coagulation. Further particulars may be had from Dr. S. Verloop, secretary of the congress, Maliesingel 15, Utrecht, Netherlands.

Association of Surgeons of Great Britain and Ireland

The annual meeting of this association will be held in London from April 30 to May 2. The programme will include discussions on the Management of Cancer of The Breast, the Treatment of Perforated Peptic Ulcer, Post-operative Strictures of the Bile-ducts, and Crohn's Disease. Applications for tickets should be sent before April 18 to the office of the association, 45, Lincoln's Inn Fields, W.C.2.

Europe's Largest Hospital

A 298-bed geriatric ward has lately been added to the Stockholm Southern Hospital. The hospital, which is the largest in Europe, can now accommodate 1559 inpatients and also has large outpatient clinics. The staff of about 1360 includes 100 doctors. About £5 million has been spent on the buildings and their equipment since 1938, when the foundation stone was laid.

The Ministry of Food has produced a new edition of the *Manual of Nutrition* (H.M. Stationery Office. Pp. 58. 2*s.*). This manual was first published in 1945 for the information of catering staff. The new edition includes a list of relevant textbooks and specialist journals.

Appointments

BOOTHROYD, L. S. A., M.B. Lond., F.R.C.S.: surgical registrar, Taunton and Somerset Hospital, Taunton.

CRAIGHEAD, ISOBEL, M.B. Edin., D.P.H.: asst. M.O., maternity and child welfare service, Edinburgh.

CUMMINGS, I. B., L.R.C.P.E.: appointed factory doctor, Lanark.

DAVIDSON, I. W., M.B. St. And., D.A.: senior registrar in anæsthetics, Inverness hospitals.

FERGUSON, HAROLD, M.B. Edin., D.M.R.D.: asst. radiologist (whole-time), hospitals in the North Liverpool area.

ISSERLIN, BRUNO, M.B. Brist., F.R.C.S.E.: consultant orthopædic surgeon, Tees-side and Cleveland H.M.C. groups.

JACKSON, C. R. S., M.A., B.M. Oxfd, F.R.C.S.E., D.O.M.S.: ophthalmic surgeon, Edinburgh Royal Infirmary.

MCKECHNIE, SAMUEL, M.B. Glasg., D.A.: asst. anæsthetist (S.H.M.O.), Inverness hospitals.

MOFFOOT, A. G., M.B. Edin., F.R.C.S.: surgical registrar, Royal Cornwall Infirmary, Truro.

REID, J. A. W., M.B. Glasg., D.P.H.: M.O.H., Jarrow, and the urban districts of Hebburn and Felling.

SEWELL, E. M., M.B. Edin., D.P.H.: senior asst. M.O., Liverpool regional blood-transfusion service.

WARD, J. A., M.R.C.S.: appointed factory doctor, Batley, Yorkshire.

The Hospital for Sick Children, London:

ANDERSON, DAPHNE, M.D. Lond., D.C.H.: part-time clinical asst. (radiotherapy).

BURNETT, DOROTHY, M.B. Lpool: house-physician.

WILSON, S. G. F., M.B. Edin.: house-physician.

WINN, PAULINE, M.B. Edin.: house-physician, neurological and neurosurgical unit.

WYLLIE, G. G., M.B. Adelaide, F.R.C.S.: house-surgeon.

Welsh Regional Hospital Board:

APTHOMAS, IFAN, M.B. Edin., D.M.R.D., F.F.R.: asst. radiologist (consultant), Wrexham, Powys and Mawddach H.M.C.

MACKINNON, DONALD, M.D. Lond.: consultant pathologist, Merthyr and Aberdare H.M.C. area.

MEEK, J. C., M.B. Glasg., D.M.R.: consultant radiologist, Newport, E. Monmouthshire, and N. Monmouthshire H.M.C.S.

OWEN, R. H., M.B. Brist., D.M.R.D.: consultant radiologist, Newport, E. Monmouthshire, and N. Monmouthshire H.M.C.S.

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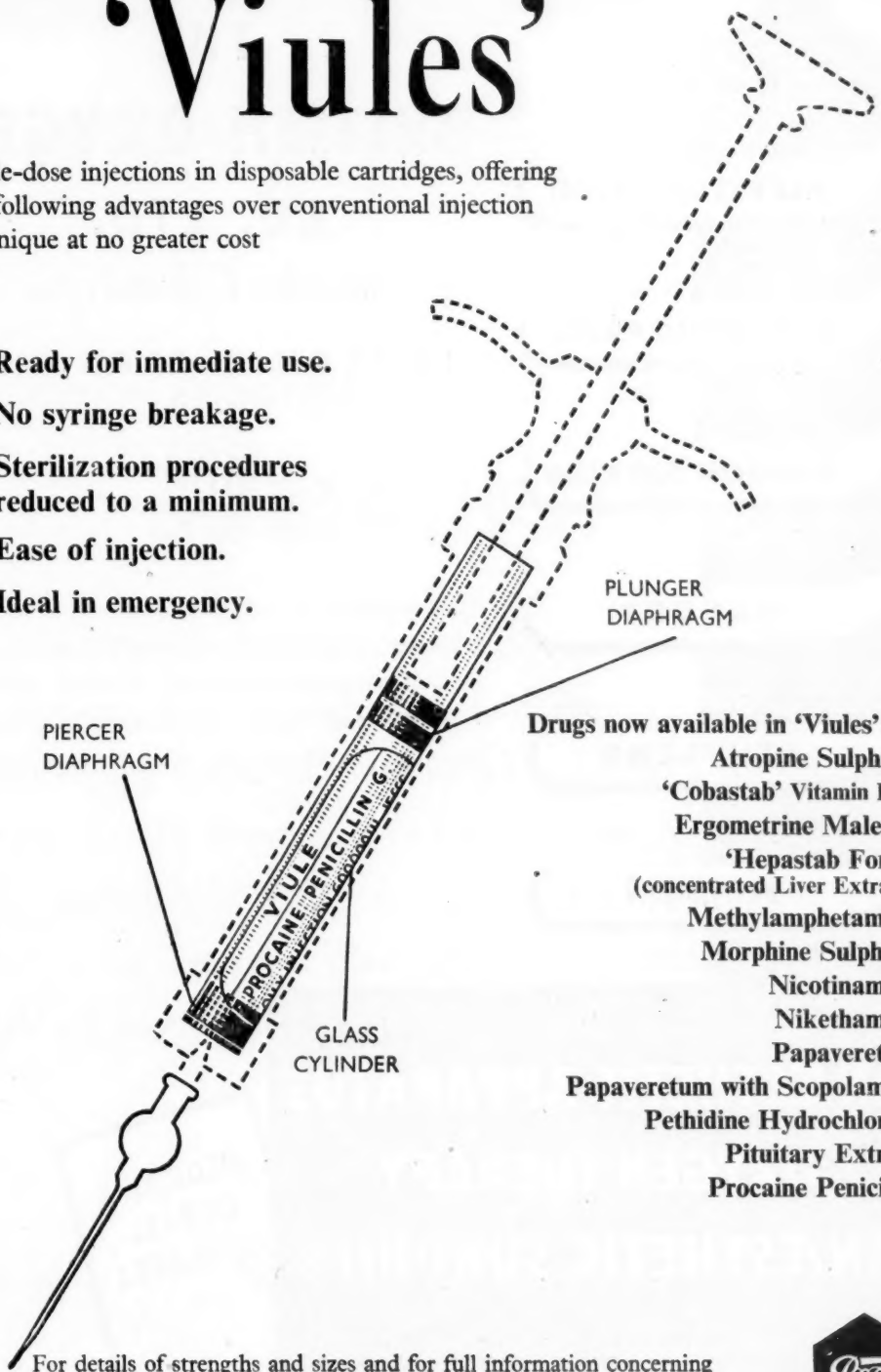

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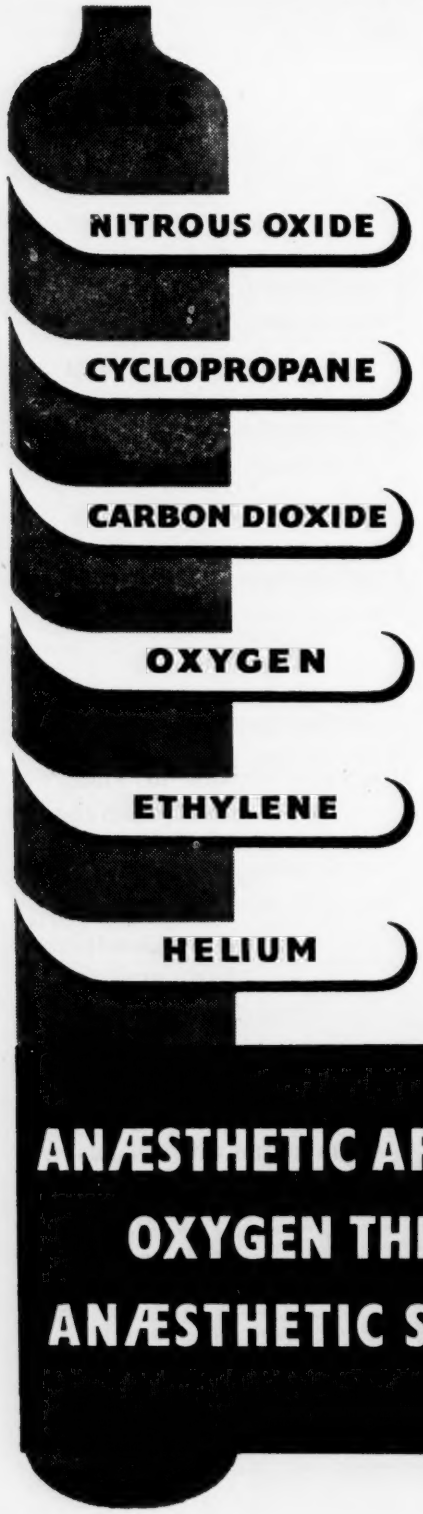

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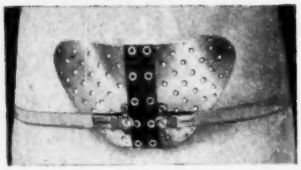

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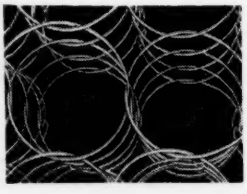

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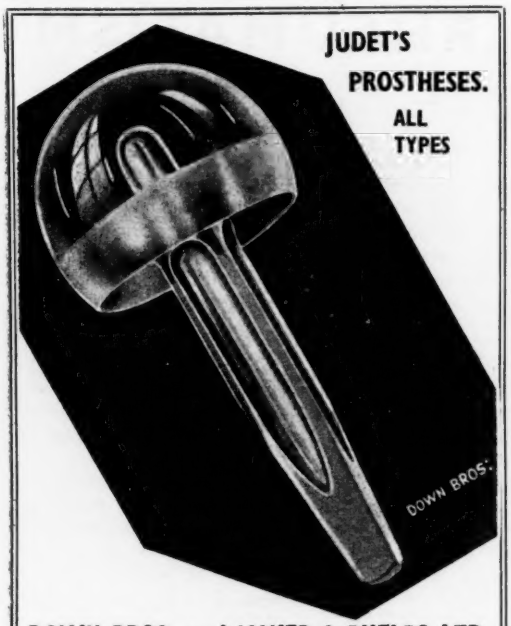

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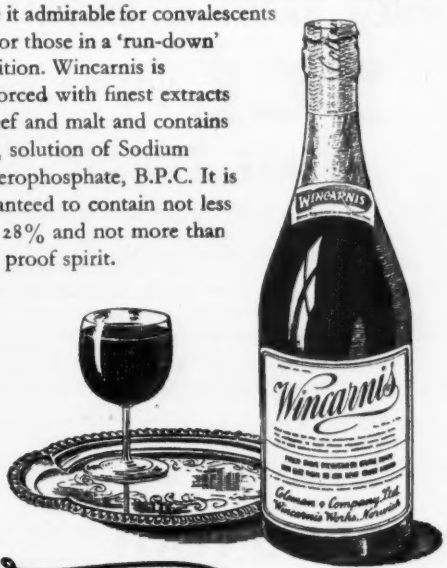

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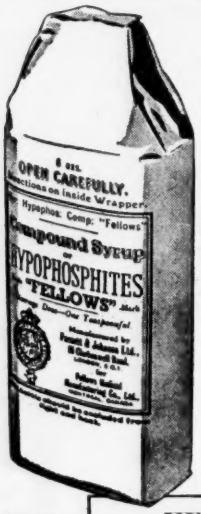

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Academic and Educational

UNIVERSITY OF GLASGOW
POSTGRADUATE MEDICAL EDUCATION COMMITTEE

REFRESHER COURSE FOR GENERAL PRACTITIONERS

A Refresher Course of 1 fortnights duration designed for General Practitioners will be held from 18TH MAY to 30TH MAY, 1953. The greater part of the Course will comprise clinical demonstrations, ward visits, and lectures in general medicine, general surgery, and obstetrics, but sessions on infectious diseases, child health, ophthalmology, dermatology, and rehabilitation of the aged will also be included.

The fee for practitioners not claiming expenses from Government sources is 10 guineas.

Since the number admitted to the Course is limited, early application should be made to the Director of Postgraduate Medical Education, The University, Glasgow, W.2, from whom the syllabus and further information may be obtained.

UNIVERSITY OF GLASGOW

ADMISSIONS—SESSION 1953–54

Notice is hereby given that the number of applicants who may be admitted to the following faculties is limited :—

Faculty of Arts.
Faculty of Law.
Faculty of Medicine (including Dentistry and Veterinary Medicine).
Faculty of Science.
Faculty of Engineering.

All those who intend to enter any of these faculties for the first time in OCTOBER, 1953, must obtain from the undersigned forms of application for admission, which should be returned as follows :—

	Forms available 1953	*To be returned Not earlier than 1953*	*Not later than 1953*
Faculty of Arts (including Education, Music, Social Study, and Public Administration)	Now ..	— ..	30th May
Faculty of Law	Now ..	— ..	30th May
Faculty of Medicine (including Dentistry and Veterinary Medicine)..	1st April ..	1st May ..	30th May
Faculty of Science ..	Now ..	— ..	30th May
Faculty of Engineering..	Now ..	— ..	30th May

Any applicant who wishes to have a form sent by post should enclose a stamped addressed envelope.

ROBT. T. HUTCHESON, Registrar.

THE UNIVERSITY OF LIVERPOOL
FACULTY OF MEDICINE
DEPARTMENT OF ANÆSTHESIA

A COURSE OF POSTGRADUATE INSTRUCTION IN ANÆSTHESIA, limited to 10 students, will be conducted at Liverpool University lasting for 1 academic year and commencing 1ST OCTOBER, 1953.

The course will combine instruction in the practical administration of anæsthetics with lectures and demonstrations in anatomy (including dissection), physiology, pathology, physics, pharmacology, medicine and surgery, and anæsthesia. For the purpose of gaining practical experience, the students will be found suitable appointments in recognised general hospitals within the Liverpool Area.

No student will be eligible to commence the course until 12 months after graduation, and he must be possessed of a registrable qualification or be a graduate in medicine and surgery of an approved University. He must also have held suitable posts in general medicine and surgery to fit him to take a higher qualification in anæsthesia. Some previous experience in anæsthetic methods will be required from those applying for this course.

The fee for the course is £60.

Applications should be made to the Reader in Anæsthesia, The University, Liverpool, 3, not later than 30th April, 1953. Forms for this purpose are available on request.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

An INTENSIVE COURSE suitable for postgraduates preparing for Higher Examinations (M.R.C.O.G. and M.D.) is being held from 8TH to 20TH JUNE, 1953, at Queen Charlotte's Maternity Hospital, The Chelsea Hospital for Women, and the Department of Obstetrics and Gynæcology at Hammersmith Hospital.

The fee for the course is 12 guineas.

A limited amount of hostel accommodation is available.

Applications should be sent to the Secretary of the Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, London, S.W.3.

THE MELVILLE TRUST SCHEME
FOR THE CARE AND CURE OF CANCER

The Trustees of the above Scheme invite applications for FELLOWSHIPS IN CANCER RESEARCH, commencing in October, 1953, and tenable in Edinburgh. An outline of the proposed research and a statement of previous research experience and scientific training should be submitted along with the application. Candidates need not possess a medical qualification. The awards will be made for a period of 2 years, and may thereafter be renewed at the discretion of the Trustees. The initial stipend will be according to experience (minimum £800 p.a.) and provision will be made for the continuation of membership of the Federated Superannuation Scheme for Universities. There are ample funds for the provision of equipment and technical assistance.

Applications, together with the names of 3 referees, should be made before 31st May, 1953, to Messrs. TODS, MURRAY & JAMIESON, W.S., 66, Queen-street, Edinburgh, 2, from whom further particulars may be obtained.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 6TH JULY, 1953.

The following Examination will be held in December, 1953.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

A 3-months course of Postgraduate Surgery has been arranged to start on 28TH SEPTEMBER, 1953. It is suitable for surgeons requiring a refresher course in the current outlook on general surgery, or for graduates preparing to specialise in surgery ; approximately 275 hours of instruction are provided. Fee £31 10s.

MEDICAL SCIENCES

A 3-months course in Applied Anatomy, Physiology, Pathology, Bacteriology and Biochemistry will begin on 29TH JUNE, 1953. This course is suitable for postgraduates wishing to take the Primary Fellowship Examination, as a final preparation in these subjects. Considerable basic knowledge is highly desirable prior to taking this course. Fee £31 10s.

INTERNAL MEDICINE

Courses lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in Medicine, begin on 30TH MARCH and 28TH SEPTEMBER, 1953. These courses consist of 320 hours instruction, comprising lectures, clinical demonstrations and ward visits. Fee £31 10s.

Additional instruction in Clinical Pædiatrics is arranged in conjunction with the course in Medicine, for which there is a small fee ; the numbers are limited.

Applications for enrolment should be addressed to the Director of Postgraduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and postgraduate experience.

UNIVERSITY OF LONDON. Applications are invited for the GEOFFREY E. DUVEEN TRAVELLING STUDENTSHIP for 1953–54, value £650 for research in any aspect of Otorhinolaryngology.

Further particulars and forms of application (to be received by 30th April, 1953) may be obtained from the Academic Registrar, University of London, Senate House, W.C.1.

UNIVERSITY OF LONDON. The Senate invite applications for the CHAIR OF MORBID ANATOMY tenable at Charing Cross Hospital Medical School (salary within the range £2250–£2750 a year, with annual increments of £100).

Applications (10 copies), must be received not later than 23rd April, 1953, by the Academic Registrar, University of London, Senate House, W.C.1, from whom further particulars should be obtained.

INSTITUTE OF CHILD HEALTH. University of London. Applications are invited for the post of ASSISTANT to the Nuffield Professor of Child Health, vacant on 1st August, 1953. The duties, which include teaching and research, will be divided between The Hospital for Sick Children, Great Ormond-street, and the Queen Elizabeth Hospital for Children. Applicants should have had experience in a Senior Registrar post. The appointment in the first instance is for 1 year, renewable for further periods up to 3 years. Salary £1300 rising to £1500.

Applications, including the names of 2 referees, should be sent to the undersigned not later than 18th April.

G. H. NEWNS, Dean.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), London, S.W.1. Applications are invited for the post of SENIOR LECTURER or LECTURER IN VIROLOGY. Applicants should hold a medical qualification and have had a training in general bacteriology with some experience of virology. In the event of a more junior applicant being appointed arrangements may be made for a period of special training in that subject. The successful applicant will be graded as Lecturer (salary scale £900–£1100) or Senior Lecturer (£1250–£1750) according to age and experience, and will be eligible for children's allowance and superannuation.

Applications, including the names of 2 referees, should be sent to the Director of Pathology, from whom further particulars may be obtained, not later than 30th April.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), London, S.W.1. Applications are invited for the post of LECTURER IN MEDICAL BACTERIOLOGY. Applicants should have some experience of clinical bacteriology. Salary scale £900–£1100 with superannuation and family allowances.

Applications, including the names of 2 referees, should be sent to the Director of Pathology, from whom further particulars may be obtained, not later than 30th April, 1953.

POSTGRADUATE MEDICAL SCHOOL. Lecturer and CONSULTANT IN PSYCHOLOGICAL MEDICINE. Routine duties will occupy 2 sessions weekly and the appointee will be expected to undertake teaching in this subject to postgraduates studying general medicine. Salary between £310 and £500 p.a. according to experience and status.

Applications to the Dean, Postgraduate Medical School, Ducane-road, W.12, by 11th April.

BRITISH EMPIRE CANCER CAMPAIGN invites applications from British subjects for EXCHANGE FELLOWSHIPS IN CANCER RESEARCH offered by The National Cancer Institute of Canada and The American Cancer Society. Fellowships are of 1 years tenure at a stipend of $4000. Travelling expenses to and from centre of work will be borne by the Campaign.

For further particulars and application forms apply to the Secretary-General, British Empire Cancer Campaign, 11, Grosvenor-crescent, Hyde Park Corner, London, S.W.1, specifying "Exchange" Fellowship. Completed applications must be received by last post on 12th April, 1953.

BRITISH EMPIRE CANCER CAMPAIGN invites applications for FELLOWSHIPS IN CANCER RESEARCH. Intermediate Fellowships will normally be tenable for 5 years at a salary of £1500–£100–£1900 p.a. Junior Fellowships will be tenable for 3 years at a salary of £1000–£100–£1200 p.a. Fellowships are open to any person of British nationality who, at the date of election, has taken a degree in any appropriate faculty in any University in the British Empire approved by the Campaign. The possession by a fellow at the date of election of a Medical Diploma registrable in the United Kingdom will be accepted as a qualification for a Fellowship in lieu of a Degree. The elections will take place in June, 1953, and work, if possible, is to begin on 1st October. Fellows must carry on their research in Great Britain or in Northern Ireland, and only at the place at which they are authorised by the Campaign to work.

For further particulars and application forms apply to the Secretary-General, 11, Grosvenor-crescent, Hyde Park Corner, London, S.W.1, specifying "Intermediate" or "Junior" Fellowship. The closing date for the receipt of applications is 30th April, 1953.

INSTITUTE OF UROLOGY. (In association with St. Peter's, St. Paul's, and St. Philip's Hospitals.) Part-time RESEARCH ASSISTANT. Applications from registered medical practitioners, holding higher surgical qualifications for research into genito-urinary tuberculosis. The work will be undertaken at Hillingdon Hospital, and the hospitals mentioned above. Appointment in the first instance for 1 year. Salary £775 p.a.

Applications to the Secretary, Institute of Urology, 10, Henrietta-street, Covent Garden, London, W.C.2, to be received by 8th April, 1953.

UNIVERSITY OF GLASGOW. Applications are invited for a LECTURESHIP IN SURGERY at the Western Infirmary. Salary according to placement on University scale for clinical teachers. The final maximum is £1500 p.a. F.S.S.U. and family allowance benefits.

Applications (12 copies) should be lodged, not later than 30th April, 1953, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

UNIVERSITY OF GLASGOW. Applications are invited for a LECTURESHIP IN MEDICINE at the Royal Infirmary. Salary according to placement on University scale for clinical teachers. The final maximum is £1500 p.a. F.S.S.U. and family allowance benefits.

Applications (12 copies) should be lodged, not later than 20th April, 1953, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

THE WELSH NATIONAL SCHOOL OF MEDICINE (UNIVERSITY OF WALES). Applications are invited for the appointment of PROFESSOR of Obstetrics and Gynæcology. The appointment is a full-time one and the salary will be on the scale £2250–£100–£2750 p.a., with participation in the Superannuation and Family Allowance Schemes.

Further particulars may be obtained from the undersigned by whom applications should be received within 28 days of the appearance of this advertisement.

34, Newport-road, Cardiff. F. DODSWORTH, Secretary.

AUCKLAND UNIVERSITY COLLEGE (University of NEW ZEALAND). The University College Council invites applications from medical practitioners for the following positions in the O. & G. Hospital, Auckland, New Zealand :—

ASSISTANT to the Medical Director. Applicants should have a higher qualification in obstetrics and gynæcology and have had 2 or more years experience in that specialty. The appointee will be attached to the clinical team under the Medical Director and will be required to live at the Hospital. The salary scale will be that of a Clinical Lecturer of the Medical School of the University of New Zealand—i.e., £1290 p.a., rising to £1590 p.a. by annual increments of £50. The commencing rate within this scale will be in accordance with previous experience. A charge (at present £110 p.a.) will be made for the rent of a small flat.

SENIOR REGISTRAR. Applicants should preferably have a higher qualification in obstetrics and gynæcology. The appointee will be attached to the clinical team under the Medical Director and will be required to live in at the Hospital. No married quarters can be provided. The salary scale will be that of an Assistant Lecturer of the Medical School of the University of New Zealand—i.e., £806 5s. p.a., rising to £921 5s. p.a. by annual increments of £57 10s., living in. The commencing rate within this scale will be in accordance with previous experience.

Further particulars and information as to the method of application should be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 20th April, 1953.

UNIVERSITY OF CAPE TOWN, South Africa. Applications are invited for the post of DEAN OF THE FACULTY OF MEDICINE, vacant from 1st February, 1954. The appointment will be made under the terms of the joint staff agreement between the University and the Provincial Administration of the Cape of Good Hope. The post is a full-time one and the incumbent is not permitted to undertake remunerative private work. The Dean must have a medical qualification ; he has the status of a Professor and is a member of the Senate. The salary scale is £2500 p.a. plus a temporary cost-of-living allowance (at present £320 p.a. for a married man and £100 p.a. for others). The University reserves the right to recommend the appointment of a person other than one of the applicants or to recommend no appointment.

Further particulars and information as to the method of application should be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications in London and South Africa, is 30th April, 1953.

THE UNIVERSITY COLLEGE OF KHARTOUM, Sudan. Applications are invited for the following LECTURESHIPS in the Faculty of Medicine :—

Anatomy—Physiology—Pathology.

Salaries on scale £E1225–£E75–£E1600 p.a., plus cost-of-living allowance at present £E144 p.a. Outfit allowance £50 on first appointment. Paid passages for member of staff and assisted passages for family on appointment, termination, and leave (each long vacation after the first). No income-tax payable at present in the Sudan. £E equals £1 0s. 6d.

Applications (8 copies), giving full details of qualifications and experience, and the names of 3 referees, should be sent to the Secretary, Inter-University Council for Higher Education in the Colonies, 1, Gordon-square, London, W.C.1, from whom further information may be obtained. Closing date 20th April, 1953.

Hospital Services : Senior Appointments

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for an appointment of CONSULTANT in the Department of Anæsthesia to work 9 half-days a week (maximum part-time) at this Hospital and at Hill End Hospital, St. Albans.

Applications (10 copies), with the names of 3 referees, should be sent to the undersigned by Friday, 10th April, 1953.

C. C. CARUS-WILSON, Clerk to the Governors.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment as Part-time CONSULTANT ANÆSTHETIST to the Woolwich Group of hospitals. Either 1 appointment or more appointments within a total of 9 notional half-days a week may be made. Duties will be divided between neurosurgery (5 notional half-days), and thoracic surgery (2 notional half-days) in the Regional units at the Brook Hospital to include emergency duties and the remaining 2 notional half-days will be devoted to ophthalmic surgery and emergencies in the Group. Candidates must have had wide experience in anæsthetics and hold the Diploma in Anæsthetics. Applicants may visit the Group by arrangement with the Group Secretary.

Apply, stating nationality, age, sex, qualifications, experience, and number of notional half-days for which available, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1. The last day for acceptance of applications will be 11th April, 1953.

BRISTOL MENTAL HOSPITALS. Barrow and Fishponds. SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of a Whole-time ASSISTANT PHYSICIAN in Psychiatry in the Senior Hospital Medical Officer grade to the above Hospitals. Candidates should have had considerable experience in general medicine and should possess a Diploma in Psychological Medicine. The Hospitals serve the entire Bristol Clinical Area, and receive cases from elsewhere in the Region. Admission-rate over 1200 p.a. Barrow Hospital is a modern unit of 350 Beds for treatment of neuroses and early cases of psychosis, investigating special problems, and general clinical research. There are active Departments of Electroencephalography, Applied Psychology, and Biochemical and Endocrinological Research. The appointment offers excellent opportunities for clinical work and research in all branches of adult psychiatry and for clinical teaching. A small house is available at Barrow Hospital.

Applications (12 copies), stating date of birth, qualifications and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 18th April, 1953.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. The Board of Governors invites applications for the appointment of a Part-time CONSULTANT DENTAL SURGEON to undertake 3 sessions per week at the Dental Hospital. Candidates should possess a medical or higher dental qualification. The appointment will be made under S.I. (1950) 1259 and will be held on the terms and conditions of service for hospital medical and dental staffs (England and Wales).

Applications, giving the names of 3 referees, must be submitted on a special form to be obtained from the undersigned. Canvassing of members of the Board of Governors or of the Advisory Appointments Committee will lead to disqualification. Closing date 27th April, 1953.

G. A. PHALP,
Secretary and Principal Administrative Officer,
United Birmingham Hospitals.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. (112 Beds.) MID-WORCESTERSHIRE GROUP OF HOSPITALS. Applications invited for Part-time CONSULTANT in General Surgery (3 notional half-days weekly). Experience in specialty and higher qualification required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 13th April, 1953.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of CONSULTANT in Pædiatrics (6 half-days per week) for duties at hospitals in the Dewsbury, Batley and Mirfield Hospital Management Committee Group and additional duties as may be required at hospitals in the Halifax, Wakefield and Pontefract Areas. The person appointed will be required to reside in or near Dewsbury.

Applications (10 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, not later than 25th April, 1953.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of CONSULTANT in Anæsthetics (9 half-days per week) for duties at the Bradford Royal Infirmary (with the Thoracic Surgical Unit), The Hospital, Middleton, and The Hospital, Grassington, together with such additional duties as may be required for the Consultant in Thoracic Surgery at other hospitals in the Area. The person appointed will be required to reside in or near Bradford.

Applications (10 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, not later than 25th April, 1953.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of CONSULTANT in Anæsthetics (9 half-days per week) for duties at hospitals in the Bradford A and B Hospital Management Committee Groups. The person appointed will be required to reside in or near Bradford.

Applications (10 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, not later than 25th April, 1953.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following appointments :—

(*a*) Whole-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale), Dewsbury, Batley and Mirfield Group. The person appointed to reside in, or near, Dewsbury.

(*b*) Whole-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale), Wakefield A and B Groups. The person appointed to reside in, or near, Wakefield.

Applications (10 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, not later than 25th April, 1953.

LIVERPOOL REGIONAL HOSPITAL BOARD. Chester AREA. Applications are invited for the post of CONSULTANT PATHOLOGIST who will be responsible for the Pathological work at hospitals in the Chester and Associated Areas. The post is either whole-time or part-time on maximum sessions according to the choice of the successful applicant. Possession of a higher qualification is desirable.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 18th April, 1953.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time non-resident post of TUBERCULOSIS PHYSICIAN AND MEDICAL OFFICER in Charge of the M.M.R. Unit based on Preston and covering North Lancashire, Blackpool, and Barrow. Successful candidate will perform regular clinical duties in a Chest Team under general guidance of a Consultant. Salary £1300 (at age 32)–£50–£1750.

Application forms and further information can be obtained from the Senior Administrative Medical Officer to the Board at Cheetwood-road, Manchester, 8, and should be returned to be received not later than 6th April, 1953.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. 3 vacancies exist for Whole-time CONSULTANT CHEST PHYSICIANS, with primary duties in tuberculosis. These are to be regarded as the first instalment of 5 appointments which will be made under a scheme for the reorganisation of the Tuberculosis Service in the City of Glasgow. Each of the 5 sectors will comprise a population of approximately 200,000. Successful applicants will be required to assume responsibility within their sectors for the clinic arrangements, and will be given inpatient facilities. They will also be required to coöperate with the Public Health Department of the City. The present appointments will be related in the first instance (*a*) to the Northern Sector (Ruchill Hospital, Glenfarg Street and Black Street Clinics) ; (*b*) to the South-Western Sector (Mearnskirk Hospital, Florence Street and Govan Town Hall Clinics) ; and (*c*) to the Eastern Sector (Belvidere Hospital and Acorn Street Clinic). 1 of the Consultant Physicians appointed will be further required to assume over-all responsibility for the organisation and general administration, in liaison with the Medical Officer of Health, of the tuberculosis arrangements within the City Area. A successful applicant must be prepared to accept an appointment in any 1 of these sectors. Additional information may be obtained from the Senior Administrative Medical Officer. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment of Whole-time ASSISTANT PATHOLOGIST to be based on the Area Laboratory at Farnborough Hospital for duty mainly at Orpington Hospital in the Orpington and Sevenoaks Group of hospitals. Candidates must have had general experience in pathology, and the possession of a higher qualification is desirable. Salary within the scale £1300–£50–£1750. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales). Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 11th April, 1953.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time appointment of ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer scale) to the Mass Radiography Service in Wales. The duties will include medical responsibility for a mobile Mass Radiography Unit based on Wrexham and operating in North Wales, under the supervision of the Director. The person appointed will be expected to perform 4 clinical sessions weekly in the Chest Clinics in the area where the mobile unit will be working. Candidates should preferably hold a higher qualification and should have had a wide experience of chest diseases and tuberculosis in particular. Previous experience in mass radiography will be an advantage.

Applications (14 copies), stating age, and giving a summary of qualifications, experience, previous appointments with dates, and publications, together with the names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD. DUNEDIN HOSPITAL, NEW ZEALAND. Applications are invited for the position of JUNIOR SPECIALIST RADIOLOGIST. Applicants must hold a Degree in Medicine of an approved University. The position is designated as that of Junior Specialist under the Hospital Employment (Medical Officers) Regulations, 1952 ; salary scale £1290–£1590 by annual increments of £50. Commencing salary according to qualifications and experience. Further information relating to this appointment can be obtained from the Office of the High Commissioner for New Zealand, 415, The Strand, London, W.C.2, or from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applications, stating age, qualifications, and postgraduate experience, together with testimonials, health and radiological certificates, will be received by the undersigned up to 10 A.M. on Monday, 20th April, 1953.

W. A. WILLIAMSON, Secretary.

P.O. Box 453, Dunedin, New Zealand.

JERUSALEM, ISRAEL. ROTHSCHILD-HADASSAH UNIVERSITY HOSPITAL. Applications are invited from Physicians of high academic status for the posts of :—

(1) HEAD of the E.N.T. Department ;

(2) HEAD of the Ophthalmological Department ;

of the Hadassah University Hospital in Jerusalem (500 Beds), with a view also to candidature for senior academic appointments in the Hebrew University-Hadassah Medical School. The post may be either full-time at a salary of I£720 (pounds Israeli) per month, plus family allowance, or part-time, with right of private practice, at 52% salary. Accommodation at a reasonable rental will be made available to the successful candidate.

Inquiries and applications, accompanied by curriculum vitæ, publications and names of at least 3 referees, should be sent in the first instance to PATWA, 4, Bloomsbury-place, London, W.C.1.

Hospital Services : Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications are invited for the post of NON-RESIDENT HOUSE PHYSICIAN, for which there are 3 vacancies, for 6 months from 1st June. Duties include work in Outpatient Department and wards. Salary £400 or £450 a year, according to experience.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 4th April to KENNETH A. F. MILES, House Governor.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—313 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN. Salary £350, £400 or £450 p.a. depending on experience, less £100 p.a. residential charges.

Applications, stating age, nationality, qualifications and experience, with copies of 3 testimonials, to the Hospital Secretary immediately.

CHARING CROSS HOSPITAL, W.C.2. Full-time Surgical REGISTRAR (non-resident—grade : Registrar). Tenable from 1st May, 1953, for 1 year in the first instance.

Application forms, obtainable from the undersigned, should be returned by 4th April, 1953.

FRANK HART,
House Governor and Secretary to the Board.

EVELINA CHILDREN'S HOSPITAL OF GUY'S HOS-PITAL, Southwark Bridge-road, London, S.E.1. Required, HOUSE PHYSICIAN (second or third post). Appointment is from 1st May, 1953, for 6 months (first 2 months in the Casualty Department) and is recognised for the D.C.H. Salary £400 or £450 p.a., less £100 p.a. for residential emoluments.

Applications, stating age, nationality, qualifications with dates, and copies of 3 recent testimonials, should reach the Hospital Secretary by 1st April, 1953.

FULHAM MATERNITY HOSPITAL, 5/7, Parsons-green, S.W.6. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident) required, immediately. Candidates may visit the Hospital by arrangement.

Applications to be submitted by 3rd April, 1953, on forms obtainable from Hospital Secretary (L.100). Fulham Hospital, St. Dunstan's-road, Hammersmith, W.6 (send stamped addressed foolscap envelope).

FINCHLEY MEMORIAL HOSPITAL, Granville-road, North Finchley, N.12. (84 Beds.) Locum RESIDENT HOUSE PHYSICIAN required for 2 weeks commencing 11th April.

Apply to Hospital Secretary.

HIGHLANDS HOSPITAL, Winchmore Hill, London, N.21. (General Hospital—818 Beds.) HOUSE SURGEON required. Preference given to applicants seeking pre-registration posts under Medical Act, 1950.

Applications, with copies of 3 testimonials, to Hospital Secretary.

GUY'S-MAUDSLEY NEUROSURGICAL UNIT. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical) for 6 months commencing 1st May next. The Unit, which is housed in the Maudsley Hospital, serves Guy's Hospital, the Bethlem Royal Hospital and the Maudsley Hospital.

Applications, giving details of experience, and the names of 2 referees, should be made within 1 week of the date of the appearance of this advertisement, to—

K. J. JOHNSON, House Governor and Secretary.

Maudsley Hospital, Denmark-hill, London, S.E.5.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, London, W.12. Full-time NON-RESIDENT SENIOR REGISTRAR (obstetrics and gynæcology) required.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 11th April.

LAMBETH HOSPITAL, Brook-drive, S.E.11. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the post of SURGICAL REGISTRAR. The appointment is normally for 2 years, but is subject to review at the end of 1 year. The post is recognised for the F.R.C.S. and is resident or non-resident, but if the latter, the person appointed will be required to sleep in on nights on duty. The successful candidate will be required to carry out mainly general surgery with some G.U., Orthopædic, and E.N.T. work. Canvassing will disqualify but candidates are not precluded from visiting the Hospital if they so desire.

For forms of application apply (enclosing stamped addressed envelope) to the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom applications should be returned not later than 18th April, 1953.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. Applications invited for the post of RESIDENT HOUSE SURGEON, vacant 20th April, 1953. Tenable for 6 months, renewable. Salary £350, £400, or £450 p.a. according to experience, subject to deduction at the rate of £100 for board, lodging, &c.

Applications, with copies of testimonials, to the Secretary at the Hospital.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) Applications invited for the post of RESIDENT SENIOR HOUSE OFFICER (Surgical Department) vacant 1st May, 1953. Salary £670 p.a. is subject to deduction at rate of £156 p.a. for board, lodging, &c.

Applications, with copies of testimonials, to the Secretary at the Hospital.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of RESEARCH ASSISTANT in Neurosurgery. Candidates must have had training in Neurosurgery. The salary will be approximate to that of Senior Registrar according to experience.

Applications (12 copies), giving details of academic career and the names and addresses of 3 referees, should be addressed to the House Governor to arrive not later than 30th April, 1953.

MILLER GENERAL HOSPITAL. (180 Beds—Recognised for F.R.C.S. examination.) HOUSE SURGEON, vacant approximately 1st May, 1953. 6 months appointment. National salary and conditions.

Application and testimonials to Secretary, Greenwich and Deptford Hospital Management Committee, St. Alfege's Hospital, Greenwich, S.E.10.

MILLER GENERAL HOSPITAL. (180 Beds.) House PHYSICIAN, vacant approximately 1st May, 1953. 6 months appointment. National salary and conditions.

Applications and testimonials to Secretary, Greenwich and Deptford Hospital Management Committee, St. Alfege's Hospital, Greenwich, S.E.10.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, London, N.W.3. HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy). Post vacant immediately.

Applications, with copies of testimonials, to the Medical Director.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited for the post of RESIDENT MEDICAL OFFICER (or if the present House Physician is appointed to this post there will be a vacancy for House Physician) at Maida Vale Hospital for Nervous Diseases, London, W.9. Appointment in the first instance for 6 months from 1st May. Grading as Senior House Officer or Registrar according to experience. Preference will be given to a candidate holding a higher degree and previous neurological experience will be an asset.

Applications, with copies of 3 recent testimonials, should be addressed to the Secretary at Maida Vale Hospital, by 14th April, 1953.

NATIONAL HEART HOSPITAL, Westmoreland-street, London, W.1 (with which is associated the Institute of Cardiology). The Board of Governors invites applications to fill 2 vacancies in the post of REGISTRAR as from 1st June, 1953. Applicants should have been fully trained in general medicine and should possess a higher medical qualification. Opportunities for research are available.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 4th April, 1953.

ROBERT G. E. WHITNEY, Secretary to the Board.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. Applications are invited for the post of CASUALTY OFFICER, vacant 2nd May, 1953. Salary £400–£450 p.a., according to experience, less £100 p.a. board-residence.

Applications, stating age, qualifications, and experience, with copies of 3 testimonials, to be sent to the Hospital Secretary, by 11th April, 1953.

PORTMAN CLINIC, 8, Bourdon-street, Davies-street, W.1. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR PSYCHIATRIC REGISTRAR required for 4 sessions per week at the above Clinic, which provides a diagnostic and treatment service for delinquent children and adults. Psychiatric training, experience in psychotherapy and child psychiatry desirable. Clinic may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Paddington Group Hospital Management Committee, Paddington Hospital, 285, Harrow-road, W.9, by 11th April, 1953.

PUTNEY HOSPITAL, Lower Common, S.W.15. House PHYSICIAN (resident), vacant 1st April. Open to registered practitioners and pre-registration interns.

Apply at once to Hospital Secretary, enclosing copies of 2 recent testimonials.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for 1 resident appointment as MEDICAL REGISTRAR which will occur between 1st and 8th May, 1953. Salary £775 p.a., inclusive of full residential emoluments.

Applications, stating age, qualifications, past and present appointments, together with 2 recent testimonials and also the names of 2 referees, should be received by the Secretary and House Governor at the Hospital by the first post on 6th April, by whom further information would be given on request.

ST. JAMES' HOSPITAL, Ouseley-road, Balham, S.W.12. Locum REGISTRAR (anæsthetics) required for duty on 9th April.

Applications stating age, qualifications, experience, and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, 14, Atkins-road, Balham, S.W.12, by 1st April.

ST. JAMES' HOSPITAL, Ouseley-road, Balham, S.W.12. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in the Anæsthetics Department of the above Hospital.

Application forms (send stamped addressed foolscap envelope) obtainable from Group Secretary, Wandsworth Hospital Group, 14, Atkins-road, Balham, S.W.12, to be completed and returned by 7th April.

ST. ANDREW'S HOSPITAL, Bow, E.3. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer) vacant on 13th April. Resident or non-resident. Hours 9 A.M.–5 P.M. daily, NOON on Saturday. No Sunday duty. Post is recognised for F.R.C.S. examination and provides wide experience in casualty and general surgery.

Apply to Group Secretary, Bow Group Hospita Management Committee, 2A, Bow-road, London, E.3.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOS-PITALS, W.C.2. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Paul's Hospital on 1st June, 1953. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), with 12 copies of 3 recent testimonials, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 18th April, 1953.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of Part-time CASUALTY OFFICER for duty at the Victoria Hospital for Children, Tite-street, Chelsea, S.W.3, for a period of 6 months, from 1st June, 1953. The hours of duty are from 9 A.M. to 1 P.M., Monday–Saturday inclusive, and the salary will be proportionate to the whole-time scale for House Officers. Previous experience in pædiatrics is desirable.

Applications, together with the names of 2 referees, should reach the undersigned not later than 20th April, 1953.

P. H. CONSTABLE, House Governor.

S.E. REGIONAL THORACIC SURGERY UNIT. (40 Beds.) Brook General Hospital, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (recognised for F.R.C.S.), vacant early May. The Unit treats all types of Chest Diseases and offers opportunity for comprehensive training in thoracic surgery. Appointment for 6 months in first instance and may be renewed for further period. Salary £670, less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered Women practitioners for the post of Part-time NON-RESIDENT CASUALTY OFFICER (House Officer grade) to attend every morning. The appointment is for a period of 6 months commencing 9th June, 1953.

For form of application apply to the Secretary at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of OBSTETRIC HOUSE SURGEON, to become vacant on 22nd June, 1953. Post recognised for the M.R.C.O.G. Appointment is for a period of 6 months.

For form of application apply to the Secretary at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE PHYSICIAN, vacant on 15th June, 1953. The appointment will be for a period of 6 months.

For form of application apply to the Secretary at the Hospital as soon as possible.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of HOUSE SURGEON vacant on 14th June, 1953. The appointment is for a period of 6 months.

For form of application apply to the Secretary at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered Female medical practitioners for the appointment of RESIDENT MEDICAL OFFICER at the Hospital's 50-Bed country branch near Crawley, Sussex. The post is vacant on 31st March, 1953, and is full-time. A part-time non-resident appointment could be made. The appointment is of Senior House Officer grade and is for 1 year.

For form of application apply to the Secretary at the Hospital.

WANSTEAD HOSPITAL, Wanstead, E.11. (191 Beds.) Applications are invited for the post of CASUALTY OFFICER (graded as Senior House Officer), vacant immediately. Salary £670 p.a., with a deduction of £120 p.a. for board, lodging, &c.

Applications, giving full particulars, together with copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WHITTINGTON HOSPITAL, N.19. North West Metropolitan Regional Hospital Board. MEDICAL REGISTRAR (general and neurological) required at above Hospital. Unit contains 100 Beds and is associated with a Neurosurgical Unit. Post recognised for M.D. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, N.6, by 7th April, 1953.

AYLESBURY, BUCKS. STOKE MANDEVILLE HOSPITAL. (624 Beds.)

(1) RESIDENT HOUSE PHYSICIAN for Medical Department, vacant 1st May.

(2) HOUSE PHYSICIAN for the Pædiatric Department, vacant 1st May. The post qualifies for D.C.H. Duties will include care of children in Infectious Diseases Unit, Plastic Unit, and Outpatient Department, Royal Buckinghamshire Hospital.

Recognised pre-registration posts; applications from registered practitioners will be considered.

Apply, with copies of 2 testimonials, to Administrative Officer.

ARLESEY, BEDS. THREE COUNTIES HOSPITAL (MENTAL). Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). Salary £700–£1000 according to experience and qualifications. The Hospital (1200 Beds), which carries out all forms of treatment and provides facilities for research work, is conveniently situated, enabling Medical Officers to attend D.P.M. and other courses in London. Some 900 patients are admitted yearly (85% voluntary). Outpatient clinics are held at the local general hospitals.

Application forms are available on request to the Medical Superintendent.

ASHFORD (near), KENT. WILLESBOROUGH HOSPITAL. SOUTH EAST KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN at the above Hospital. Salary £350, £400 or £450 a year according to experience. A deduction of £100 a year will be made in respect of residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments:—

Ashton-under-Lyne General Hospital (800 Beds)

SENIOR HOUSE OFFICER (obstetrics). Recognised for M.R.C.O.G.

SENIOR HOUSE OFFICER (general surgery), vacant now.

HOUSE SURGEON (general surgery), vacant now. Recognised for F.R.C.S. (Eng.), pre-registration post.

E.N.T. SURGEON (Senior House Officer grade), vacant now.

HOUSE PHYSICIAN for Pædiatric Unit required immediately.

Appointments are subject to Ministry of Health terms and conditions of service.

Applications, giving age, nationality, qualifications, and experience, with copies of 3 testimonials, should be forwarded to R. W. McVITY, Group Secretary.

Astley-road, Stalybridge, Cheshire.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. ABERDEEN ROYAL INFIRMARY. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in Dermatology at the above Hospital, the appointment (non-resident) to be for a period of 1 year with the possibility of extension thereafter. The successful candidate may be required to undertake certain duties in the V.D. Department of this Hospital. Salary and conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications should be lodged with the Secretary, Aberdeen General Hospitals, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. ABERDEEN ROYAL INFIRMARY. Applications are invited for the appointment of a SENIOR HOUSE OFFICER for the Neurosurgical Unit at the above Hospital, to commence duty immediately. The appointment is subject to the conditions of service issued by the Department of Health for Scotland.

Applications should be lodged with the Secretary, Aberdeen General Hospitals, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ACCRINGTON VICTORIA HOSPITAL. (112 acute beds.) Applications are invited for the post of HOUSE PHYSICIAN at this busy General Hospital. Pre-registration post; National Health Service salary and conditions of service.

Applications should be sent to the Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BRADFORD. ST. LUKE'S HOSPITAL.

SENIOR HOUSE OFFICER (pathology), vacant 1st May Salary £670 p.a., less £130 p.a. residential emoluments.

HOUSE OFFICER (anæsthetics), vacant now. Salary £350–£450, less £100 p.a. residential emoluments.

Locum HOUSE SURGEON (general and plastic), vacant now to 31st July.

Locum ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now to 31st July.

Salary for above locum posts £8 p.w., less residential emoluments at the rate of £100 p.a.

Applications for all above posts, stating age, nationality qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD ROYAL INFIRMARY.

HOUSE OFFICER (anæsthetics), vacant 17th April. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Locum HOUSE SURGEON (general and urology), vacant now to 30th April, 1953. Salary £8 p.w., less residential emoluments at rate of £100 p.a.

Applications for above posts, stating age, nationality, qualifications and experience with copy testimonials to Secretary.

BARNET GENERAL HOSPITAL, Wellhouse-lane, Barnet, HERTS. RESIDENT SENIOR HOUSE OFFICER (E.N.T. and Eye Departments) required. Post vacant 20th April. Recognised for D.L.O.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be sent to the Hospital Secretary.

BARNET. CLARE HALL HOSPITAL, South Mimms, BARNET, HERTS. RESIDENT SENIOR HOUSE OFFICER (medical) required. The Hospital has 504 Beds, including 76 for surgery, which includes tuberculous and non-tuberculous thoracic conditions. Subject to national conditions of service.

Applications, stating age, qualifications and experience, should be forwarded immediately to the Medical Director.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. (Recognised for pre-registration purposes.) BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a post of HOUSE PHYSICIAN at the above Hospital, with duties under control of Consultant Physician. National salary scale (House Officer grade) with deduction of £100 p.a. for emoluments.

Applications, stating age, qualifications, and experience, with copy testimonials, to be forwarded to the Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BEDFORD GENERAL HOSPITAL. (434 Beds.) Bedford GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required. Preference will be given to persons seeking pre-registration posts under the Medical Act, 1950. The appointment offers exceptional opportunities for general experience in a busy Acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to the Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds.) HOUSE SURGEONS (Male or Female). Posts vacant 1st April and 1st May, 1953. Recognised for F.R.C.S. The appointments will be for a period of 6 months of which 2 may be spent in the Burns Unit (Medical Research Council). The Hospital is the largest Traumatic Unit in the country and treats 50,000 new patients each year. The posts offer ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant Staff.

Applications, with copies of recent testimonials or names of 2 referees, to the Administrator.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (1059 Beds.) SENIOR HOUSE OFFICER (anæsthetics), resident or non-resident. This post offers exceptional opportunities for reading for higher qualifications. Salary in accordance with the conditions of the National Health Service.

Apply to Medical Superintendent, with details of qualifications, experience, and age, with copies of 3 recent testimonials.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. HOUSE PHYSICIAN required. Post vacant mid-April. General Hospital and offers good experience. 5 other Resident Medical staff.

Applications immediately, giving age, qualifications and experience, with copies of 2 recent testimonials or names of 2 referees, to the Medical Superintendent.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR in Anæsthetics for duties in the Teaching Group of hospitals. The appointment will be for 1 year in the first instance and subject to annual review. The successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the Birmingham Regional Hospital Board in accordance with an arrangement for the interchange of Registrars agreed between the 2 Boards. Candidates must possess the Diploma in Anæsthetics of the Conjoint Examining Board in England. The post is resident but applications will be considered for a non-resident appointment.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 4th April, 1953.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. HOUSE SURGEON required immediately (approved pre-registration post). Appointment will be for 6 months but renewable. Hospital carries resident staff of 4 providing 2-year course of instruction which is recognised for the Diplomas of D.O. (England) and F.R.C.S. (England) in Ophthalmology. Wide experience available in all branches, including surgery.

Applications, stating age, nationality, qualifications, and experience, to Secretary, Management Committee, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. Resident HOUSE PHYSICIAN (recognised for pre-registration) required in a Unit of General Medicine which is under the control of 2 Consultant Physicians with approximately 80–100 adult general medicine beds. Vacant 1st April.

Applications, enclosing copies of 3 recent testimonials, to the Secretary within 7 days from the appearance of advertisement.

BIRMINGHAM (near). MARSTON GREEN MATERNITY HOSPITAL, Berwicks-lane, MARSTON GREEN. HOUSE SURGEON (obstetrics) required. Post vacant 1st May, 1953. 140 maternity beds and 10 gynæcological beds. Also 14-Cot Premature Baby Unit. Post recognised for Diploma and Obstetric part of Membership of Royal College of Obstetricians and Gynæcologists. Hospital affiliated to Birmingham Medical School for training of students.

Applications, stating age, nationality, and experience, accompanied by copies of 3 recent testimonials, to the Secretary, Hospital Management Committee, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. MONYHULL HALL MENTAL DEFECTIVE HOSPITAL. (1142 Beds.) BIRMINGHAM (MENTAL D) GROUP OF HOSPITALS. Applications invited for appointment of Whole-time SENIOR REGISTRAR in Psychiatry, with some duties at ancillary premises including residential special school for 350 children. Hospital recognised for D.P.M. Single accommodation available. Candidates should have considerable experience in specialty. Successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals in accordance with the arrangements for the interchange of Registrars agreed between the 2 Boards.

Application forms from Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, to be returned before 13th April, 1953.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for following whole-time appointments :—

(*a*) **North Staffordshire Royal Infirmary, Stoke-on-Trent** (475 Beds)
Stoke-on-Trent Group of hospitals
REGISTRAR in Orthopædics with some duties at Hartshill Orthopædic Hospital (77 Beds). Non-resident.

(*b*) **Corbett Hospital, Stourbridge** (106 Beds)
Dudley and Stourbridge Group of hospitals
REGISTRAR in General Surgery (resident).

For both appointments experience in specialty essential and higher qualification an advantage.

Application forms from Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, to be returned before 13th April, 1953.

BLACKPOOL. VICTORIA HOSPITAL. (347 Beds.)
(1) SENIOR HOUSE OFFICER (E.N.T. Department), vacant 31st March, 1953. Recognised for the D.L.O. and F.R.C.S.
(2) SENIOR HOUSE OFFICER (Department of Ophthalmology). Post recognised for the F.R.C.S. and D.O.M.S.
(3) SENIOR HOUSE OFFICER (Department of Anæsthetics), vacant 22nd March, 1953. Recognised for D.A.
(4) RESIDENT HOUSE OFFICER (gynæcology and obstetrics), vacant 26th April, 1953. Post recognised for gynæcology for Membership of R.C.O.G.
(5) RESIDENT HOUSE SURGEON (Surgical Department). Post recognised for the F.R.C.S. Pre-registration post under Medical Act, 1950.

Salary and conditions of service in accordance with national scale.

Applications, with references, should be sent to the Hospital Secretary, Victoria Hospital, Blackpool.

BOLTON. THE ROYAL INFIRMARY. (237 Beds.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE PHYSICIAN (second or third appointment), vacant 6th April, tenable for 6 months.

Applications, stating age, nationality, qualifications and experience, and the names of 2 referees, should be sent immediately to the undersigned at the Royal Infirmary, Bolton.

H. P. TRAVIS, Group Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN, vacant 30th April. This appointment will eventually be reserved for pre-registration Interns and applications submitted from persons in this category will be considered.

Applications to the Deputy Hospital Secretary at the Hospital.

BRENTWOOD, ESSEX. WARLEY HOSPITAL. (2000 Beds.) SENIOR PSYCHIATRIC REGISTRAR required immediately. The initial appointment will be on a temporary basis for 6 months pending the Regional Board's decision on the establishment of Senior Registrars. An unfurnished house is available at a reasonable rental. The Hospital affords excellent opportunities for advanced study in modern psychiatry.

Apply with full details and names of 2 referees, to the Physician-superintendent not later than 11th April, 1953.

BRISTOL CLINICAL AREA. The Board of Governors of THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Orthopædic and Traumatic Surgery. This post becomes vacant on 1st July, 1953. Applicants should have had previous experience in orthopædic and traumatic surgery. The appointment will be held for 1 year in the first instance, and he renewable for a further year. The successful candidate will be required to work for the first year at Winford Orthopædic Hospital, near Bristol.

Applications (12 copies), stating date of birth, qualifications and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 13th April, 1953.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (499 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Regional Neurosurgery Department. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BRISTOL (near). WINFORD ORTHOPÆDIC HOSPITAL. (232 Beds.) SENIOR HOUSE OFFICER. Applications invited from registered medical practitioners to fill vacancy, March, 1953. Salary £670 p.a. Post tenable for 12 months or longer, resident or non-resident. (Hospital bus service to and from Bristol.)

Apply, stating age, qualifications and experience, with testimonials to undersigned as soon as possible.

E. N. ROPER, Secretary-Administrator.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (550 Beds.) Applications invited for post of HOUSE OFFICER for Surgical Tuberculosis Unit, comprising chiefly orthopædic tuberculosis, genito-urinary tuberculosis, and other non-pulmonary and combined lesions. First, second, or third post; tenable for 6 months. Salary in accordance with the terms of service issued by the Ministry of Health, plus £50 p.a.

Applications, with copies of 3 testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BROMLEY GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics (qualified minimum 1 year) for duty at Group hospitals, resident Bromley Hospital, required 11th April, 1953, for 1 year. Post recognised for D.A. Salary £670, less £150 for residence.

Apply, naming 3 referees, to Administrative Officer, Bromley Hospital, Bromley, Kent.

BROMSGROVE. BARNSLEY HALL HOSPITAL. (750 Beds—Mental and Nervous Diseases.) Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER to the above Hospital. The post offers experience in all branches of psychiatry, including all forms of modern treatment of both inpatients and outpatients. Full residential accommodation is available for a single person.

Applications, with the names of 3 referees, should be sent to the Medical Superintendent within 14 days of the appearance of this advertisement.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.

Bury General Hospital
SENIOR HOUSE OFFICER (orthopædics).

Applications are invited for the above post and should indicate age, nationality, qualifications, and experience, and should be sent to the undersigned as soon as possible.

RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) with duties mainly at Bury General Hospital. The post, tenable for 1 year, affords opportunities for gaining experience in all branches of pathology. Salary and conditions of service as Ministry of Health scale.

HOUSE OFFICER (surgical), pre-registration post.

Fairfield General Hospital (85 maternity beds, 25 gynæcological beds)
SENIOR HOUSE OFFICER (obstetrics).

Applications, stating nationality, age, qualifications, and experience, along with names of 2 referees, should be forwarded immediately to the undersigned at Bury General Hospital, Walmersley-road, Bury, Lancs.

H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) Applications are invited for the following posts :—

(*a*) HOUSE SURGEON for E.N.T. and ophthalmic duties with some general surgical and casualty duties.

(*b*) HOUSE SURGEON for casualty and orthopædic duties.

Both posts are recognised for pre-registration practitioners and post (*b*) is recognised for the F.R.C.S.

Full details to the Hospital Secretary.

BURTON-ON-TRENT GENERAL INFIRMARY. (240 acute beds.) CASUALTY/ORTHOPÆDIC HOUSE SURGEON required (House Officer grading), vacant now. Post offers excellent experience.

Apply, giving details of age, qualifications and experience, with testimonials or names for reference, to—

J. E. SMITH, Group Secretary.

BURTON-ON-TRENT GENERAL INFIRMARY. (240 acute beds.) RESIDENT HOUSE SURGEON required for General Surgical and Gynæcological Units. This post offers excellent experience.

Applications, giving full details of age, qualifications, experience, together with testimonials or names for reference, should be addressed to J. E. SMITH, Group Secretary.

BRIGHTON GENERAL HOSPITAL. Resident Senior HOUSE OFFICER (anæsthetics). Salary according to national scale.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, as soon as possible.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP HOSPITALS. SENIOR HOUSE OFFICER (£670 p.a.) for duties in the E.N.T. Department of the Group Hospitals (78 Beds), vacant now. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, &c., together with the names and addresses of 2 referees, to be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7, as soon as possible.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. CASUALTY HOUSE SURGEON required (1 of 2—attached to the Orthopædic and Traumatic Unit), now vacant.

Applications, giving details of qualifications, age, and experience, together with the names and addresses of 2 referees, to be sent to the Administrative Officer as soon as possible.

CARSHALTON. ST. HELIER HOSPITAL, Wrythe-lane, CARSHALTON, SURREY. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICERS (2 posts) to the Obstetric and Gynæcological Department (108 obstetric beds and 30 gynæcological beds), vacant end May. Posts recognised for M.R.C.O.G.

Applications, stating age, qualifications and experience, with copies of 2 testimonials and the name and address of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, within 10 days of the appearance of this advertisement.

CAMBORNE. TEHIDY HOSPITAL. (189 Beds.) West CORNWALL HOSPITAL MANAGEMENT COMMITTEE. There is a vacancy for a RESIDENT HOSPITAL OFFICER for which applications are invited from registered medical practitioners. Practitioners convalescent from tuberculosis will be favourably considered. This is an appointment which offers good scope in this branch of medicine.

Applications, together with copies of 2 recent testimonials, should be addressed to the Hospital Secretary, Tehidy Hospital, Camborne.

CANTERBURY. KENT AND CANTERBURY HOS-PITAL. (265 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON. The above post, which is recognised for the F.R.C.S. Diploma, is now vacant. National Health Service salary and conditions.

Applications to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY (near). ST. AUGUSTINE'S HOSPITAL CHARTHAM, near CANTERBURY. Applications are invited by the Management Committee of this Hospital for Mental and Nervous Disorders, from registered practitioners (Male or Female) for the following posts :—

JUNIOR HOSPITAL MEDICAL OFFICER. Salary £700–£50–£1000 p.a.

SENIOR HOUSE OFFICER for tenure of 1 year. Salary £670 p.a.

A house may be available on the Hospital estate, for which a rental would be charged. Single accommodation is also available in the Hospital, the charge for full board, &c., being £150 p.a.

Apply to Medical Superintendent, stating nationality, age, sex, qualifications and experience, with names of 3 referees, within 14 days of the publication of this advertisement.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (160 Beds.) RESIDENT HOUSE OFFICER (surgical—recognised by Royal College of Surgeons) required at the above Hospital. Full Consultant staff. Salary £350, £400, or £450 p.a. according to experience, less £100 for residence. 6 months appointment.

Applications stating age, nationality, qualifications and experience, with names of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CHESTERFIELD ROYAL HOSPITAL. Chesterfield HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required at above Hospital. This post is for a pre-registration House Officer or Senior House Officer, and carries national salary and conditions.

Further information is available from M. H. BOONE, Secretary.

CHESTERFIELD ROYAL HOSPITAL. Sheffield Regional HOSPITAL BOARD. RESIDENT LOCUM SURGICAL REGISTRAR required at above Hospital from 6th April to 11th May, 1953. Remuneration £16 per week.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

CHELMSFORD HOSPITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to large Surgical Units, for a period of 12 months, commencing beginning of April.

Applications, stating age, sex, qualifications and experience, with recent testimonials, should be sent to the Secretary, Hospital Management Committee—Chelmsford Group, Chelmsford and Essex Hospital, London-road, Chelmsford, by 10th April.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 acute beds.) RESIDENT HOUSE SURGEON required for 6 months appointment. Salary, first post £350, second post £400, third post £450 p.a., less £100 p.a. charge for residence. Post approved for pre-registration practitioners. Post recognised for F.R.C.S. 6 Residents including Resident Surgical Officer and 3 House Surgeons. Vacant immediately.

Apply to Senior Administrative Officer of Hospital.

CHESTER (near). MEADOWSLEA HOSPITAL. WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident). Salary £700–£1000 p.a., less recognised charge for services provided by Hospital. The appointed candidate will be a member of a chest team covering a wide area in North Wales with excellent opportunities for experience in hospital and chest clinic practice. A flat is available for the successful candidate.

Applications, stating age, qualifications, experience, together with the names of 3 referees, to the Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, within 14 days.

CHESTER. BARROWMORE HOSPITAL, Great Barrow. (205 Beds.) SENIOR HOUSE OFFICER (Male). Post vacant immediately. Salary £670, subject to deduction of £120 p.a. for residence. The Hospital is modern in all respects and contains Regional Thoracic Surgical Unit.

Apply immediately, sending 2 references or names of referees, to Secretary.

CHESTER. DEVA HOSPITAL (Mental), Liverpool-road, CHESTER. PSYCHIATRIC SENIOR HOUSE OFFICERS (2) required. Salary £670 p.a. Accommodation available for single person. All forms of modern treatment available, including Insulin Unit. There are Psychiatric Outpatient Clinics at 3 General Hospitals, Occupational Therapy Units and voluntary treatment wards. Facilities given to study for higher qualifications.

Apply Medical Superintendent.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) HOUSE SURGEON to Ophthalmic Department required. Post now vacant; recognised for D.O. Provides excellent experience in inpatient and outpatient work.

Applications, with copy testimonials, to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) HOUSE OFFICER in General Surgery required (94 Beds). **Pre-registration post.** Recognised for F.R.C.S. Excellent experience in all types of general surgery.

Applications to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

COLCHESTER. ESSEX COUNTY HOSPITAL. Locum SENIOR REGISTRAR in Radiology required. Salary £22 a week, less £150 a year for residential emoluments.

Applications, with copies of 3 testimonials, should be sent to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER. ESSEX COUNTY HOSPITAL. (192 Beds.) Applications invited for post of CASUALTY OFFICER AND HOUSE SURGEON to the E.N.T. Department of the above Hospital. First, second, or third post; tenable for 6 months. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COTTINGHAM, near HULL. CASTLE HILL HOSPITAL. HOUSE SURGEON (Senior House Officer grade) for Major Thoracic Surgery Unit at above Hospital, to work under the supervision of the Consultant Thoracic Surgeon. Unit part of Group incorporating Mass Radiography Unit and full laboratory facilities.

Application forms obtainable from Group Secretary, Hull B Hospital Management Committee, De la Pole Hospital, Willerby, E. Yorkshire.

DARTFORD HOSPITAL MANAGEMENT COMMITTEE.

HOUSE OFFICER (general medicine) at Joyce Green Hospital, Dartford.

HOUSE SURGEON (orthopædics) at The Southern Hospital, Dartford.

SENIOR HOUSE OFFICER (orthopædics and traumatic surgery) at The West Hill Hospital, Dartford, from 26th April, 1953.

Applications, stating age, qualifications, experience, nationality, and the names of 2 persons to whom reference may be made, to be sent for House Officers, to the Medical Superintendent of the Hospital concerned, and for Senior House Officer, to the Group Secretary, Dartford Hospital Management Committee, The Bow Arrow Hospital, Dartford.

DONCASTER ROYAL INFIRMARY. Doncaster Hos-PITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners with the necessary experience for the appointment of ORTHOPÆDIC HOUSE SURGEON at above Infirmary, in the grade of Senior House Officer. Salary at the rate of £670 p.a., from which a deduction of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DEWSBURY. THE GENERAL HOSPITAL. (119 Beds.) Applications are invited for the position of SENIOR HOUSE OFFICER (surgery and casualty), vacant 1st April. Post tenable for 1 year. Salary £670 p.a., less deductions for board, lodging, &c.

Applications, stating age, qualifications, details of present and previous appointments, together with names of 2 referees, should be sent immediately to the Administrative Officer, The General Hospital, Dewsbury, Yorkshire.

DERBY CITY HOSPITAL. Sheffield Regional Hospital BOARD. RESIDENT LOCUM MEDICAL REGISTRAR required immediately at the above Hospital for approximately 6–8 weeks. Remuneration at the rate of £16 per week with a deduction for residential emoluments.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

DERBY CITY HOSPITAL. Sheffield Regional Hospital BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. Post recognised for D.A. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 6th April, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY CITY HOSPITAL. (A recently built acute general Hospital.) DERBY AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER (obstetrical), Male or Female. The Hospital has a large Obstetrical Department and is recognised in Obstetrics for the Membership and the Diploma R.C.O.G.

Applications, stating full details, together with copies of 2 recent testimonials, should be sent to the Medical Superintendent, City Hospital, Derby, as soon as possible.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT CASUALTY REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 6th April, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Derby AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Pre-registration HOUSE SURGEON/SENIOR HOUSE OFFICER (gynæcological—resident), vacant 28th April, 1953.

Applications, stating full details, with copies of 2 recent testimonials, should be sent as soon as possible to the Secretary, Derbyshire Royal Infirmary, Derby.

DORCHESTER. DORSET COUNTY HOSPITAL. (113 Beds.) HOUSE SURGEON (Male or Female) required, post now vacant and tenable for 6 months. Recognised for F.R.C.S. examination and approved for pre-registration service. Excellent experience in all types of surgery.

Applications, with details of age, experience and nationality, together with copy testimonials, to Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (resident) surgical. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

Corbett Hospital, Stourbridge (106 Beds)

CASUALTY OFFICER. Post now vacant.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident), surgical, post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

Applications, stating age, experience, with copies of 3 recent testimonials, to— H. RAYMOND HURST,
Secretary to the Management Committee.
The Guest Hospital, Dudley.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY. SENIOR HOUSE OFFICER for E.N.T. Unit at above Infirmary associated with main department at Cumberland Infirmary, Carlisle.

Applications to Secretary, Royal Infirmary, Dumfries.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds. 85 general surgical beds, including E.N.T., Oral and Facio-maxillary Unit.) Applications are invited for the appointment of HOUSE SURGEON for general surgery, including duties in E.N.T. and Eye Department, to fill an immediate vacancy. Busy General Hospital with easy access to London. Salary on national scale, less a deduction at the rate of £100 p.a. for board, lodging, &c. The successful candidate will be favourably considered for a House Physician post on the termination of this appointment.

Applications, with copies of 2 recent testimonials, to reach the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex, immediately.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 29th April. Pre-registration post, but registered practitioners may apply. Recognised for F.R.C.S. 6 months appointment.

Applications, stating age, qualifications and experience, with copies of 3 recent testimonials, should be sent by 10th April, 1953, to Group Secretary at above address.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER in Anæsthetics (second or third post), vacant **1st May, 1953.** Post recognised for the D.A. R practitioners holding first posts may apply. 6 months appointment.

Applications, stating age, qualifications and experience, with the names of 2 referees, to the Secretary of the Management Committee by 1st April, 1953.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. SENIOR SURGICAL CASUALTY HOUSE OFFICER (resident) required. Salary £670 p.a. Deduction of £130 p.a. for board, residence, &c.

Applications, together with the names of 2 referees, to Group Secretary, Edgware General Hospital, Edgware, Middlesex, not later than 4th April, 1953.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. RESIDENT HOUSE PHYSICIAN. Post vacant 13th May, 1953. Salary £350–£450 according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 4th April, 1953. Candidates selected for interview will be notified by 11th April, 1953.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (117 Beds.) HOUSE SURGEON (Senior House Officer grade) required immediately. Post tenable for 6 months in first instance.

Applications, with full details, to be forwarded to the Secretary, 101, Manthorpe-road, Grantham, Lincs.

FOLKESTONE. ROYAL VICTORIA HOSPITAL. South-EAST KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. The duties will be mainly obstetrical and gynæcological with some general surgery. Salary £350, £400, or £450 a year according to experience. A deduction of £100 a year will be made for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, " Ash-Eton," Radnor Park West, Folkestone.

FOLKESTONE. ROYAL VICTORIA HOSPITAL. South-EAST KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital which will become vacant early in April. Salary £350, £400, or £450 a year, less £100 a year for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, should be forwarded to the Group Secretary, " Ash-Eton," Radnor Park West, Folkestone.

GATESHEAD. SHERIFF HILL INFECTIOUS DISEASES HOSPITAL, Sheriff Hill, GATESHEAD, 9, CO. DURHAM. (127 Beds.) GATESHEAD AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER at the above Hospital. The post will be vacant approximately 1st April, 1953. In addition to 3 Cubicle Blocks the Hospital has a Surgical Tuberculosis Ward of 30 Beds and a Pulmonary Tuberculosis Ward.

Applications, together with copies of 3 recent testimonials, or the names and addresses of 3 referees, should be submitted to H. CLARK, Group Secretary.

" The Lodge," I.D. Hospital, Sheriff Hill,
Gateshead, 9, co. Durham.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, GREAT YARMOUTH. Vacancies occur at the above hospital for 1 SENIOR HOUSE SURGEON and 1 JUNIOR HOUSE SURGEON (Male or Female). The Hospital is staffed by a Consultant General Surgeon, and a Consultant E.N.T. Surgeon and is regularly visited by Consultant Staff from the Norfolk and Norwich Hospital, Norwich. Salary for Senior post £670 p.a., less £150 for residential emoluments, for Junior post £350, £400, or £450, according to experience, less £100 for residential emoluments.

Applications, stating age, qualifications, experience, with names of 2 referees, to Secretary of Hospital.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE PHYSICIAN. The post is tenable for 1 year.

Applications, together with the names of 2 referees, should be sent to the Hospital Secretary, Grimsby General Hospital, Lincs.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), vacant 7th April, 1953. Post tenable for 1 year.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GUILDFORD. ST. LUKE'S HOSPITAL. South West METROPOLITAN REGIONAL HOSPITAL BOARD. GUILDFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of OBSTETRICAL AND GYNÆCOLOGICAL REGISTRAR (resident or non-resident). Preference will be given to applicants holding higher qualifications. Candidates may visit the Hospital by arrangement.

Application forms from Group Secretary, Guildford Group Hospital Management Committee, St. Luke's Hospital, Guildford, which should be returned to him to arrive not later than 10th April, 1953.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (229 Beds.) RESIDENT HOUSE SURGEON required. The post is in general surgery and is recognised for the F.R.C.S. examination, tenable for 6 months, and approved for pre-registration practitioners. The vacancy will occur on 1st May.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (229 Beds.) HOUSE PHYSICIAN required. The post is resident and tenable for 6 months. It will be vacant on 1st May and is recognised for pre-registration candidates.

Applications, with copies of 3 testimonials, should be sent as soon as possible to the Hospital Secretary.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (705 Beds—General.) REGISTRAR required for Gynæcological and Obstetric Units at above Hospital. Recognised for M.R.C.O.G. Previous experience essential. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, St. John's Hospital, Kingston-lane, Uxbridge, Middlesex, by 6th April.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (705 Beds—General.) REGISTRAR required for Thoracic Surgical Unit at above Hospital. Duties will include some general surgical work. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, St. John's Hospital, Kingston-lane, Uxbridge, Middlesex, by 6th April.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Salary at the rate of £400 p.a., less £100 for residential emoluments. Duties to commence 1st April, 1953.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited from registered medical practitioners for the appointment of a Whole-time Temporary REGISTRAR (surgical) at the above Hospital. Appointment to commence immediately, with tenure up to 6 months. Salary at the rate of £775 p.a. Non-resident.

Applications, giving fullest details, together with copies of recent testimonials or the names of referees, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of HOUSE SURGEON (Male or Female), second post, for general surgery. Recognised pre-registration appointment. 6 months appointment. Salary at rate of £400 p.a., less £100 p.a. for residential emoluments. Duties to commence as soon as possible.

Applications to Group Secretary, Hertford Group Hospital Management Committee, County Hospital, Hertford. Herts.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (162 Beds—recognised by Royal College of Surgeons.) Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £350, £400, £450 p.a., according to experience, less £100 p.a. for board and residence.

Applications, stating age, qualifications, experience, and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) CASUALTY AND ORTHOPÆDIC HOUSE SURGEON. Post now vacant. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON. Post recognised for F.R.C.S., vacant 25th April. National scale of salary.

Apply to Hospital Administrator.

HALIFAX AREA HOSPITALS MANAGEMENT COMMITTEE. 2 HOUSE PHYSICIANS required early May. 1 for duty at Royal Halifax Infirmary (301 Beds), the other for duty at Halifax General Hospital (425 Beds).

Applications to Group Secretary, Royal Halifax Infirmary, Halifax, Yorkshire.

HALIFAX AREA HOSPITALS MANAGEMENT COMMITTEE. 2 SENIOR HOUSE OFFICERS required in the Anæsthetic Departments at Royal Halifax Infirmary (301 Beds) and Halifax General Hospital (425 Beds); both busy acute general hospitals. Opportunities for studying for D.A. Salary £670 p.a., with deduction of £130 p.a. for residence, &c.

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, to be forwarded to Group Secretary, Royal Halifax Infirmary, Halifax, Yorkshire.

HEMEL HEMPSTEAD, HERTS. WEST HERTS HOSPITAL. (170 Beds—5 residents.) CASUALTY OFFICER (Junior Hospital Medical Officer). Salary £700–£50–£1000 p.a., less £120 p.a. for residential emoluments.

Applications, giving full details, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Gynæcological and Abnormal Maternity Department, required to commence duties on 16th April, 1953. The post is recognised for the D.Obst.R.C.O.G. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON,
Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty immediately. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Locums required for the following posts :—

HOUSE SURGEON.
ORTHOPÆDIC HOUSE SURGEON.
OPHTHALMIC HOUSE SURGEON.
E.N.T. HOUSE SURGEON.
CASUALTY OFFICER.

Applications to the Hospital Secretary.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Applications are invited for the following posts :—

3 HOUSE SURGEONS (1 Senior House Officer grade). Recognised for F.R.C.S.
ORTHOPÆDIC HOUSE SURGEON.
CASUALTY OFFICER (Senior House Officer grade).
E.N.T. HOUSE SURGEON (recognised for F.R.C.S. and D.L.O.).
OPHTHALMIC HOUSE SURGEON (recognised for D.O.).

Applications to the Hospital Secretary.

HULL. KINGSTON GENERAL HOSPITAL. (398 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointments of 2 HOUSE OFFICERS; 1 mainly gynæcology and 1 general surgery (recognised pre-registration appointments), vacant now. Salary £350, £400, or £450, according to experience. The posts are resident and tenable for 6 months.

Applications, with full particulars, to be forwarded to the Secretary.

HULL. KINGSTON GENERAL HOSPITAL. (398 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (recognised pre-registration appointment), vacant now. Salary £350, £400, or £450, according to experience. The post is resident and tenable for 6 months.

Applications, with full particulars, to be forwarded to the Secretary.

ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE.

HOUSE SURGEON, Royal I.W. County Hospital, Ryde (119 Beds), vacant now. Post recognised for F.R.C.S. and approved for pre-registration service. National salary scale and conditions.

HOUSE SURGEON, St. Mary's Hospital, Newport, I.W. (365 Beds), vacant now. Recognised pre-registration post. National salary scale and conditions.

Applications, giving full details, with copies of 2 testimonials, to Chief Administrative Officer, Hospital Management Committee, Clatterford House, Carisbrooke, I.W.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required for Medical Unit at above Hospital. Non-resident. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, Middlesex, by 7th April, 1953.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road. (275 Beds.) Applications are invited for the post of HOUSE SURGEON to the Gynæcological and Obstetric Department. (48 obstetric beds, 37 gynæcological beds.) The post is vacant early in April and is normally of 6 months duration and of House Officer grade.

Applications and copies of recent testimonials to Hospital Secretary.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road. (275 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST. The post is of Senior House Officer grade and is normally of 1 years duration—vacant from 18th May. The post is recognised for the D.A. examination.

Applications, with copies of recent testimonials to Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL AND IPSWICH BOROUGH GENERAL HOSPITAL. EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in E.N.T. Surgery at above Hospitals. Post recognised for D.L.O. and provides wide experience. Appointment for 1 year, renewable for second year.

Applications, stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 13th April, 1953. Candidates are invited to visit the Hospitals by direct arrangement with the Hospital Management Committee Secretary, East Suffolk and Ipswich Hospital.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consultant Surgeon. The post, which is graded House Officer, first, second, or third post, is recognised for the F.R.C.S. examination.

Applications, stating age, nationality, experience, and copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Senior Consultant Surgeon vacant on 1st April, 1953. The post, which is graded House Officer (first, second, or third post), is recognised for the F.R.C.S. examination.

Applications, stating age, nationality, experience, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of CASUALTY OFFICER AND ASSISTANT HOUSE PHYSICIAN (House Officer post) to a busy Casualty Department.

Applications, stating age, nationality, experience, and copies of recent testimonials, to the Hospital Secretary.

KETTERING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Maternity Unit at St. Mary's Hospital and Gynæcological Ward at the Kettering General Hospital. This post becomes vacant on 1st April, 1953, and there is a full Consultant staff. Applicants should have had not less than 6 months experience as a hospital resident. Salary and conditions in accordance with National Health Service regulations. The appointment, in the first instance, is for 6 months.

Applications, together with not more than 3 testimonials, should be sent to the Group Secretary, General Hospital, Kettering, as soon as possible.

LEIGH INFIRMARY, Leigh, Lancs. (102 Beds.) House SURGEON (Male or Female) with some casualty duties, required at the above Hospital. House Officer grade post, recognised for the F.R.C.S. examinations. Post now vacant. (Pre-registration.)

Applications, stating age, qualifications, &c., together with the names of 2 referees, should be received by the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as early as possible.

LEIGH INFIRMARY, Leigh, Lancs. (102 Beds.) Senior HOUSE OFFICER in General and Orthopædic Surgery required. Post now vacant.

Applications, stating age, nationality, and previous hospital appointments, together with the names of 2 referees, should be received by the undersigned as soon as possible.

T. W. HURST, Secretary,
Wigan and Leigh Hospital Management Committee.
Knowsley House, Wigan.

LLANDAFF, CARDIFF. ROOKWOOD HOSPITAL. (269 Beds.) MINISTRY OF PENSIONS. SENIOR HOUSE OFFICER (medical). The post which is now vacant offers good experience in internal medicine. Salary £670 p.a., with a deduction of £130 for residential emoluments.

Application forms will be provided on request to the Director-General of Medical Services (M.S.2), Ministry of Pensions Norcross, Blackpool, Lancashire.

LEICESTER GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (pathology), vacant 1st April, 1953.

Applications, stating age, qualifications and experience, together with copies of recent testimonials, to the Secretary, Leicester No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER ROYAL INFIRMARY. Applications are invited for 2 posts of SENIOR HOUSE OFFICER (anæsthetics), vacant 1st April. Posts are recognised for the D.A.

Applications, stating age, qualifications, and experience, together with copies of 3 recent testimonials, to the Secretary, Leicester No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester, as soon as possible.

LEICESTER ROYAL INFIRMARY. Leicester Regional CENTRE FOR RADIOTHERAPY. Applications are invited for the resident post of SENIOR HOUSE OFFICER (radiotherapy) or REGISTRAR if in possession of Part I of the D.M.R.T., now vacant.

Candidates should state age, nationality, qualifications and submit copies of 3 recent testimonials, to Secretary, Leicester No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEEDS REGIONAL HOSPITAL BOARD AREA. Medical ACT, 1950. RESIDENT HOUSE OFFICER posts. Recognised pre-registration House posts will be available for the 6 months commencing 1st May, 1953, in the following hospitals approved under the Medical Act, 1950. Preference will be given to pre-registration candidates, but applications will also be accepted from practitioners registered before 1st January, 1953.

Scarborough Hospital (191 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).
1 Surgical (midwifery and ophthalmology).
County Hospital, York (222 Beds)
2 Surgical (general surgery and gynæcology).
Hull Royal Infirmary and Sutton Branch (242 Beds)
1 Surgical (general surgery and gynæcology).
1 Surgical (E.N.T.).
1 Surgical (ophthalmology).
1 Medical.
Kingston General Hospital, Hull (398 Beds)
1 Surgical (general surgery, gynæcology and orthopædic).
1 Medical.
Victoria Children's Hospital, Hull (143 Beds)
1 General Surgical.
1 Surgical (general surgery and orthopædic).
1 Medical.
Westwood Hospital, Beverley (202 Beds)
1 Surgical (orthopædic).
1 Medical.
East Riding General, Driffield (249 Beds)
1 Medical.
Pontefract General Infirmary (89 Beds)
1 General Surgical.
Clayton Hospital, Wakefield (200 Beds)
1 Surgical (general surgery, orthopædic and gynæcology).
1 Medical (general medical, pædiatric and ophthalmology).
1 Mixed (general medical, general surgery and dermatology).
Pinderfields General, Wakefield (663 Beds)
1 General Surgical.
1 Surgical (orthopædic).
1 Medical.
General Hospital, Batley (99 Beds)
1 Surgical (E.N.T. and orthopædic).
General Hospital, Dewsbury (119 Beds)
1 Medical (general medical, pædiatric and dermatology).
Staincliffe General, Dewsbury (314 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).
1 Medical (general medical and pædiatric).
Huddersfield Royal Infirmary (304 Beds)
1 General Surgical.
1 Surgical (midwifery and gynæcology).
1 Medical.
Royal Halifax Infirmary (301 Beds)
1 Surgical (ophthalmology and E.N.T.).
2 Medical.
Halifax General Hospital (425 Beds)
1 General Surgical.
1 Medical.
Bradford Royal Infirmary (507 Beds)
1 Surgical (general surgery and urology).
1 Medical.
St. Luke's Hospital, Bradford (828 Beds)
1 General Surgical.
1 Medical.
1 Medical (pædiatric).
General Hospital, Otley (170 Beds)
1 Medical (general medical and pædiatric).
St. James's Hospital, Leeds (1539 Beds)
3 General Surgical.
1 Surgical (gynæcology).
7 Medical.
1 Medical (geriatric).
1 Medical (pædiatric).
1 Medical (dermatology).
St. Mary's Hospital, Leeds (216 Beds)
1 Midwifery.

Candidates should express, where applicable, their preference for medical, surgical or midwifery posts within the same hospital on the application form.

Candidates wishing to apply for posts at more than 1 hospital should complete a separate form in respect of each hospital.

Application forms can be obtained from the Dean, The School of Medicine, Thoresby-place, Leeds, 2, or from the Senior Administrative Medical Officer, Leeds Regional Hospital Board, Park-parade, Harrogate, and should be returned to either of the above-named as soon as possible. Applications may be made in advance of results of final examinations.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics
(*a*) Huddersfield Group (resident or non-resident).
(*b*) York A and Tadcaster Group (non-resident).
(*c*) St. James's Hospital, Leeds, with additional duties at hospitals in Leeds A and B Groups (non-resident).

Chest Diseases
Middleton Hospital near Ilkley (400 Beds). There are good surgical and radiological facilities and both pulmonary and non-pulmonary cases are treated. Residential accommodation is available for a single person.

General Medicine
York A and Tadcaster Group (non-resident).

General Surgery
(*a*) Pontefract and Castleford Group. The post is resident and married accommodation is available.
(*b*) St. Luke's Hospital, Bradford (non-resident). The duties of the post are approximately divided between general and orthopædic surgery.

Infectious Diseases
Castle Hill Hospital, Cottingham, E. Yorks (resident/non-resident).

Obstetrics and Gynæcology
(*a*) Dewsbury, Batley and Mirfield Group (resident), not yet recognised for M.R.C.O.G.
(*b*) St. Mary's Hospital, Leeds (109 obstetrical beds), and at St. James's Hospital, Leeds (74 obstetrical and 24 gynæcological beds). The person appointed to reside in the first instance at St. Mary's Hospital.

Orthopædic Surgery
(*a*) Bradford Royal Infirmary with additional duties as required at other Orthopædic Units in the Bradford A Group (non-resident).
(*b*) York A and Tadcaster Group (non-resident) for duties mainly at York General and City Hospitals.
(*c*) Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (non-resident).

Pædiatrics
Huddersfield and Halifax Groups (non-resident).

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 9th April, 1953.

LEEDS REGIONAL HOSPITAL BOARD invites applications from recent graduates with at least 1 years experience in hospital work for a post in the SENIOR HOUSE OFFICER Grade providing a course of training in pathology (morbid anatomy, chemical pathology, bacteriology, and haematology) at the Leeds Medical School for those who wish to equip themselves for work as Registrars in the Pathological Service. The post will be tenable normally for 2 years, subject to satisfactory progress, and the successful applicant will be expected to take up duty on or about 1st May, 1953.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, not later than 9th April, 1953.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON (orthopædic) for the 5 months from 1st April to 31st August, 1953.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL, 14. BROADGREEN HOSPITAL. Applications are invited from suitably qualified medical practitioners for 2 vacancies as SENIOR HOUSE OFFICERS in the Regional Thoracic Surgery Unit. Salaries will be £670 p.a., subject to a deduction of £130 p.a. in respect of residential emoluments.

Applications on forms obtainable from the undersigned at the above address, should be returned completed within 10 days of the appearance of this advertisement.

H. BLYTHE, Group Secretary.

LIVERPOOL, 9. FAZAKERLEY HOSPITAL, Longmoor-lane. Applications are invited for the post of SENIOR HOUSE OFFICER. The Hospital admits all types of infectious disease and is the teaching centre for the University of Liverpool.

Applications to the Physician-Superintendent.

LIVERPOOL RADIUM INSTITUTE, Liverpool, 7. Applications are invited for a resident post in the JUNIOR HOSPITAL MEDICAL OFFICER grade. Salary scale £700–£50–£1000, according to experience. This appointment is particularly valuable to practitioners who contemplate adopting radiotherapy as a special career. On the other hand, it provides an excellent opportunity for studying for a higher qualification either in medicine or in surgery.

Applications, giving particulars of age and experience, together with names of 2 referees, should reach the Medical Director by 14th April, 1953.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Lincoln NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery (resident). Post recognised for the F.R.C.S. Terms and conditions of service in accordance with those laid down for hospital medical and dental staffs.

Applications, together with copies of 3 recent testimonials, should be forwarded to the undersigned as soon as possible.

R. W. HOWICK, Group Secretary.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Lincoln NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Pathology (resident). Terms and conditions of service in accordance with those laid down for hospital medical and dental staffs.

Applications, together with copies of 3 recent testimonials, to be forwarded to the undersigned as soon as possible.

R. W. HOWICK, Group Secretary.

LUTON CHEST CLINIC, Grove-road, Luton. North West METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (resident preferred) required at the above Clinic. Appointment will include duties in attached medical wards in St. Mary's Hospital, at Hitchin Chest Clinic, and attendance at sessions for minor thoracic surgery. Good training in general medicine as well as experience in treatment of tuberculosis and diseases of the chest essential. Successful candidate would be encouraged to pursue further postgraduate studies. Clinic may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 7th April.

MANSFIELD (near). NEWSTEAD SANATORIUM, FISHPOOL, near MANSFIELD, NOTTS. (240 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER. The Sanatorium is a modern building and the post offers good experience in all forms of treatment of pulmonary tuberculosis. The successful applicant will also undertake outpatient work at the Nottingham Chest Clinic, for which free transport is provided; and facilities are available for attending the Thoracic Surgical Clinic.

Apply, giving age, qualifications, and names of 2 referees, to the Physician-Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. 2 SENIOR REGISTRARS to the Department of Anæsthetics, to commence as soon as possible. Whole-time, non-resident posts, tenable for 12 months, renewable. Applicants must possess higher qualifications.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 11th April, 1953.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. ANÆSTHETICS HOUSE OFFICER, to commence as soon as possible. The appointment is for 6 months at a salary of £400 or £450 p.a., with a deduction at the rate of £100 p.a. in respect of board and lodging and other services provided. Applicants should have had experience in the specialty.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 8th April, 1953.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for RESIDENT MEDICAL STAFF (Senior House Officer grading—£670 p.a., less £130 p.a. for residential emoluments).

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—426 Beds.) Applications are invited from registered medical practitioners for the following posts:—

1 SENIOR HOUSE OFFICER (obstetrics), vacant 21st May, 1953.

1 SENIOR HOUSE OFFICER (pædiatrics), vacant 1st May, 1953.

1 HOUSE OFFICER (general surgery), with some duties in E.N.T. work, now vacant.

The Senior House Officer (obstetrics) post is recognised for training for Membership and Diploma in Obstetrics examination of the R.C.O.G. and the Senior House Officer (pædiatrics) for the D.C.H. The Pædiatric Unit comprises 36 Beds and Cots, including 10 non-tuberculous thoracic surgery beds. There is a Neonatal Department of 73 obstetric beds.

Vacancies occur periodically in the various departments at the hospital, and House Officers are eligible for appointment to another specialty at the end of the original term of service when such vacancies occur.

Salary for House Officer post £350–£450 p.a. according to experience. £100 p.a. deduction for residential accommodation and services. 6 months appointment. The Senior House Officer appointments will be for 12 months at a salary of £670 p.a., less £155 p.a. for residential accommodation and services.

Application forms from the Secretary, Park Hospital, Davyhulme, near Manchester.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, MANCHESTER, 8. (Non-Sectarian; General Hospital—105 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery), now vacant, to act as Casualty Officer and Deputy Resident Surgical Officer.

Applications, stating age, qualifications and dates, particulars of previous appointments with dates, along with the names and addresses of 2 referees, to be sent to the undersigned immediately.

A. T. SAMPSON, Group Secretary.

Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in Accident and Orthopædic Surgery to the Wigan and Leigh Group of hospitals with main duties at the Royal Albert Edward Infirmary, Wigan (200 Beds). The post provides wide experience and training in orthopædic surgery.

Forms of application may be obtained from the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, and should be returned with copies of 2 recent testimonials, to be received as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD. North MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of REGISTRAR (radiology) for duties at Crumpsall Hospital, and also at Booth Hall and Monsall Hospitals in the Manchester Babies' and Children's Group.

Applications, stating age, nationality, details of qualifications and experience (both with dates), along with names and addresses of 2 referees, to be received by the undersigned as soon as possible. A. T. SAMPSON, Group Secretary.

Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the following posts in the Ashton, Hyde and Glossop Group of hospitals, with duties mainly at Ashton-under-Lyne General Hospital (800 Beds):—

REGISTRAR in General Medicine.

REGISTRAR in General Surgery (recognised for F.R.C.S.(Eng.)).

REGISTRAR in Radiology (resident or non-resident).

For duty also in the Oldham and District group.

Application forms obtainable from, and returnable to—

R. W. MCVITY, Group Secretary, Ashton, Hyde and Glossop Hospital Management Committee, Astley-road, Stalybridge, Cheshire.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES, Quay-street, MANCHESTER, 3. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (resident), vacant 20th June, 1953. The appointment is for a period of 12 months.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, to be sent to the Hospital Secretary at the Hospital.

MANCHESTER EAR HOSPITAL, Manchester, 15. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE OFFICER at the above Hospital. Daily outpatient clinics are held with Manchester Consultants in attendance.

Applications, stating age, qualifications, experience, and names of 2 referees, to be forwarded to the Secretary at the Hospital.

MANCHESTER. NORTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (orthopædics) now vacant, with duties at Crumpsall Hospital and other hospitals within the Group.

Applications, stating age, qualifications and dates, particulars of previous appointments with dates, along with the names and addresses of 2 referees, to be sent to the undersigned immediately.

A. T. SAMPSON, Group Secretary.

Crumpsall Hospital, Manchester, 8.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. There are 55 E.N.T. beds, and 6 specialist operating sessions each week. Valuable experience is available and the post is recognised for the purposes of the F.R.C.S. Salary will be £670 a year, less £150 a year for residential emoluments.

Applications immediately to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maid-tone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. Post vacant March, 1953. Salary at the rate of £350 a year: a deduction at the rate of £100 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING-ROOM OFFICER. Salary £670 a year, with deduction of £150 a year for residential emoluments. Post now vacant; available temporarily on basis as locum at agreed fee.

Applications to the Administrative Officer at the Hospital as soon as possible.

MILFORD CHEST HOSPITAL. Milford, Surrey. (348 Beds.) GODALMING, MILFORD AND LIPHOOK GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a SENIOR HOUSE OFFICER (surgical) at the above Hospital. The appointment is residential; salary and deduction for board, lodging, &c., in accordance with the national scale (£670). All modern forms of treatment are carried out at the Hospital, including major thoracic surgery, a proportion of the beds being set aside for non-tuberculous thoracic surgery.

Applications, giving full details, together with the names of 3 referees, to be sent, as soon as possible, to the Physician-Superintendent, Milford Chest Hospital, Milford, Surrey.

MERTHYR GENERAL HOSPITAL. (120 Beds.) Merthyr AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical). The post (now vacant) offers an excellent all-round experience in general surgery. Salary (£670 p.a., less emoluments) in accordance with Ministry of Health terms and conditions of service. Appointment for 1 year in the first instance.

Applications with copies of 2 testimonials, to the Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

NOTTINGHAM. CITY HOSPITAL. (Recognised training Hospital for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 6th April, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM. CITY HOSPITAL. (837 Beds.) Required, GYNÆCOLOGICAL HOUSE SURGEON, vacant. 1st May, 1953, (recognised for pre-registration purposes). Salary £350–£450 p.a. according to experience, less £100 p.a. for residential emoluments. Recognised for M.R.C.O.G.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (837 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER to the Department of Thoracic Surgery. Post now vacant. Salary £670 p.a., less £130 p.a. for residential emoluments. The appointment will be for 1 year.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be submitted immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Required, SENIOR MEDICAL HOUSE OFFICER for the above Hospital, duties to commence as soon as possible. Salary (less £150 residential emoluments) and conditions of service in accordance with those laid down by the Ministry.

Applications, stating age, qualifications and experience together with copies of testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER; duties to commence as soon as possible. Terms and conditions of service in accordance with the published regulations of the Ministry of Health. £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the undersigned as soon as possible. HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER for the Casualty Department. Salary (less £150 emoluments) and conditions of service in accordance with those laid down by the Ministry; duties to commence as soon as possible.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM. FIRS MATERNITY HOSPITAL. (40 Beds.) Required, RESIDENT SENIOR HOUSE OFFICER (obstetrics). Post vacant 16th April, 1953. The post is recognised for D.Obst.R.C.O.G. Previous experience in obstetrics an advantage. Salary £670 p.a., less £130 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and nationality, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. NOTTINGHAM NO. 1 HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (resident) required at the above Infirmary. Salary and conditions of service in accordance with the published conditions of the Ministry of Health. Duties to commence on 10th April. This post is recognised for the D.O.M.S. examination.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

H. M. STANLEY Secretary.

General Hospital, Nottingham.

NORTH GLOUCESTERSHIRE CLINICAL AREA. The BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in General Medicine. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be required to work for the first year at the Gloucestershire Royal Hospital, Gloucester.

Applications (12 copies), stating date of birth, qualifications and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 13th April, 1953.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Applications invited for post of ANÆSTHETIC HOUSE OFFICER commencing 1st April, 1953. 6 months appointment in first instance. Recognised for D.A. and for pre-registration.

Applications, enclosing copies of 3 recent testimonials, as soon as possible to S. G. HILL, Superintendent.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Applications invited for post of HOUSE OFFICER to Fracture and Orthopædic Department, commencing 1st April, 1953. Recognised for F.R.C.S. and for pre-registration. 6 months appointment in first instance.

Applications, enclosing copies of 3 recent testimonials, as soon as possible to S. G. HILL Superintendent.

NORWICH. NORFOLK AND NORWICH HOSPITAL. (440 Beds.) Applications are invited for the appointment of SENIOR HOUSE SURGEON to the Orthopædic Department. Salary £670 p.a., less £150 p.a. for full residential emoluments.

Applications, stating age, qualifications, experience, with names of 2 referees, to Secretary, Group 6 Hospital Management Committee, St. Stephen's-road, Norwich.

NORWICH. NORFOLK AND NORWICH HOSPITAL. (440 Beds.) Applications are invited for the appointment of JUNIOR CASUALTY OFFICER AND HOUSE SURGEON to the E.N.T. and Ophthalmic Departments (House Officer status). 6 months appointment. Salary £350, £400, or £450 according to experience, less deduction £100 p.a. for residence, &c.

Applications, stating age, experience, qualifications, with names of 2 referees, to the Secretary, Norwich, Lowestoft, and Great Yarmouth Hospital Management Committee, St. Stephen's-road, Norwich.

NUNEATON. GEORGE ELIOT HOSPITAL. (289 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (46 general medical beds).

Applications to the Hospital Secretary.

NUNEATON. GEORGE ELIOT HOSPITAL. (289 Beds.) HOUSE SURGEON required for General Surgical Department (54 surgical beds). No casualty duties. Pre-registration post.

Applications to the Hospital Secretary.

NUNEATON. GEORGE ELIOT HOSPITAL. (289 Beds.) PÆDIATRIC HOUSE PHYSICIAN required (35 Beds). Pre-registration post. Recognised for D.C.H. and includes supervision of babies in Maternity Ward.

Applications to the Hospital Secretary.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the resident appointment of SENIOR HOUSE OFFICER to the Ophthalmic Department at the Royal Victoria Infirmary. The appointment will be for 1 year and will be subject to Ministry of Health terms and conditions of service. The salary is at the rate of £670 p.a., subject to the appropriate deductions.

Applications, giving full details with the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the resident appointment of SENIOR HOUSE OFFICER to the Bacteriological Department of the Royal Victoria Infirmary. The successful candidate will work under the supervision of the Clinical Bacteriologist and the duties will include those concerned with Hospital Blood Transfusion. The appointment is for 1 year and will be subject to Ministry of Health terms and conditions of service. The salary is at the rate of £670 p.a., subject to the appropriate deductions.

Applications, giving full details, with the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE REGIONAL HOSPITAL BOARD. ST. GEORGE'S HOSPITAL, MORPETH. (1170 Beds.) SENIOR PSYCHIATRIC REGISTRAR (resident), whole-time. Salary scale £1000–£1300. Candidates should normally have had previous experience in psychiatry, but applications will be considered from candidates with no previous practical experience in psychiatry who hold a higher medical qualification, have had wide experience in general medicine and intend to obtain a Diploma in Psychological Medicine and specialise in psychiatry. Arrangements can be made for the person appointed to take the necessary course of study for the Durham Diploma in Psychological Medicine. A flat is available. The appointment is for 1 year in the first instance and may be renewed from year to year for 4 years. Candidates are free to visit the Hospital by arrangement with the Medical Superintendent, from whom further particulars may be obtained.

Applications, with names and addresses of 1–3 referees, and/or 1–3 testimonials, should be addressed to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Durham AND NORTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE GROUPS. REGISTRAR (physical medicine), whole-time, resident or non-resident. Appointment up to 31st August, 1954, in the first instance and may be renewed for a further period. Salary £775–£890 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Cleve-LAND HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR PÆDIATRICIAN (whole-time), resident, at the Children's Hospital, Stockton-on-Tees (74 Beds). Well-furnished married quarters available. Appointment up to 31st August, 1954, in the first instance and may be renewed for a further year. Salary £775–£890.

Applications, together with names and addresses of 3 referees (preferably), or 3 testimonials, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. South WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (obstetrics and gynæcology) required at the General Hospital, Bishop Auckland (300 Beds, including 22 gynæcological and 22 maternity beds). Appointment up to 31st August, 1954, in the first instance. Single accommodation available. Salary scale £775–£890 p.a.

Applications, together with names and addresses of 3 referees (preferably), or 3 recent testimonials, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER, vacant now. Salary £670, less £130 for accommodation and services. Model Casualty Department, newly constructed.

Applications, with full details, to Chief Administrative Officer, Clatterford House, Carisbrooke, I.W.

OXFORD. UNITED OXFORD HOSPITALS. Oxford EYE HOSPITAL. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER with Ophthalmic experience for above Hospital for 6 months commencing immediately. The successful candidate will, if found suitable, be appointed for 6 months as Senior House Officer at Royal Berkshire Hospital (Ophthalmic Department) from 1st October, and a further 6 months as Senior Resident Officer at a salary of £775 p.a. at Oxford Eye Hospital.

Applications, stating age, qualifications, experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford.

NEATH GENERAL HOSPITAL, Neath. (412 Beds.) MID GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (general surgery). The Hospital is recognised for the F.R.C.S. and has a panel of visiting Consultants.

Applications, stating age, qualifications, experience, and naming 2 referees, should be addressed to the Secretary of the Committee, 8, Wind-street, Neath, immediately.

PENZANCE. WEST CORNWALL HOSPITAL. (General —100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of CASUALTY HOUSE SURGEON. Post now vacant.

Applications, stating age, nationality, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be forwarded to the Hospital Secretary, West Cornwall Hospital, Penzance.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications are invited from registered medical practitioners for the appointments of :—

(1) SENIOR HOUSE OFFICER to Casualty and Fracture Department, Greenbank Road Section, vacant immediately.

(2) RESIDENT DENTAL HOUSE SURGEON, Greenbank Road Section, vacant 21st May, 1953.

(3) RESIDENT ANÆSTHETIST, Greenbank Road Section, vacant immediately, recognised for the D.A.

(4) HOUSE SURGEON, Greenbank Road Section, vacant 8th April, 1953, recognised for the Fellowship of the Royal College of Surgeons.

(5) HOUSE OFFICER, Alexandra Maternity Home, Devonport, vacant 14th May, 1953.

(6) SENIOR HOUSE OFFICER in Anæsthetics, Freedom Fields Section, vacant immediately.

(7) SENIOR HOUSE OFFICER to Casualty Department, Freedom Fields Section, vacant 31st May, 1953.

(8) Locum HOUSE SURGEON, in the Department of Obstetrics and Gynæcology, Freedom Fields Section, for a period of 2 months, from 1st May until 1st July, 1953.

Applications, stating age, nationality, qualifications and experience, with the names of 3 referees, to be sent to the undersigned as soon as possible.

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Devonport.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth and East Dorset Hospital Management Committee. RESIDENT CASUALTY OFFICER (Senior House Officer, £670) required 12th May, 1953. Post suitable for person reading for higher diplomas.

Applications to the Hospital Secretary.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth and East Dorset Hospital Management Committee. HOUSE SURGEON (pre-registration) required 16th April, 1953. The Hospital is recognised for the F.R.C.S. and F.R.C.S.E.

Applications to the Hospital Secretary.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds. Committee's Base Hospital serving population of 177,000. Recognised for the D.Obst. R.C.O.G., D.C.H., and D.A.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical).

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, to be sent as soon as possible to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SAINT MARY'S HOSPITAL. (773 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (Casualty and Orthopædic Department).

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. QUEEN ALEXANDRA HOSPITAL. (40 medical beds.) Applications are invited for the appointment of SENIOR HOUSE PHYSICIAN vacant 23rd March, 1953.

Applications, stating age, experience and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointment :—

Queen Alexandra Hospital (124 surgical beds)

HOUSE SURGEON, vacant now.

Applications, stating age, experience and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointment :—

Royal Portsmouth Hospital (70 surgical beds)

HOUSE SURGEON, vacant now.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PURLEY AND DISTRICT WAR MEMORIAL HOSPITAL. (53 Beds.) CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for appointment of RESIDENT MEDICAL OFFICER of Senior House Officer status commencing May for period of 6 months in first instance. Charge of £150 p.a. for board, lodging, &c. There is no other Resident Medical Officer at Hospital. Experience in obstetrics an advantage. Hospital comprises surgical, medical, obstetric and gynæcological beds, and there is a Casualty Department.

Application form obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon.

REDHILL COUNTY HOSPITAL. (576 Beds.) South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Wholetime SURGICAL REGISTRAR.

Application forms (returnable by 11th April) and appointments to visit obtainable from Group Secretary, Redhill Group Hospital Management Committee, Redhill County Hospital, Earlswood Common, Redhill, Surrey.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications invited for appointment as HOUSE SURGEON (E.N.T. Department), vacant 1st May.

Apply, stating age, nationality, qualifications with dates, present post, with copies of 3 recent testimonials, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited for the appointment of RESIDENT ASSISTANT PATHOLOGIST (House Officer), vacant 15th April, for period of 6 months. Previous experience in pathology not essential.

Applications, stating age, qualifications with dates, nationality, present post, together with copies of 3 recent testimonials, to the Hospital Secretary.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department), vacant 1st May. Duties (which include casualty work) at Royal Berkshire Hospital (403 Beds) and Battle Hospital (343 Beds). Person appointed will work with Registrar and House Officer.

Applications, stating age, nationality, present post, qualifications with dates, together with names of 2 referees, to the Group Secretary, 3, Craven-road, Reading.

RHONDDA. PORTH AND DISTRICT HOSPITAL. (110 Beds. This Hospital is visited regularly by Consultants from the Cardiff Royal Infirmary.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (surgical and casualty).

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, to be sent as soon as possible to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON in the General Surgical Unit, vacant from 1st May, 1953. Recognised for F.R.C.S. 6 months appointment. This very active General Surgical Unit of approximately 100 Beds affords ample opportunity for candidates to obtain first-class tuition and experience.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials or names of 2 referees, should be sent immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN (neurosurgery), vacant immediately. Resident post, tenable for 6 months. Would be suitable for candidate seeking a higher qualification as it offers excellent experience in neurology.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials or names of 2 referees, should be sent immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE OFFICER (resident) in the Obstetric and Gynæcological Unit consisting of 88 obstetric beds and 52 gynæcological beds. Post vacant from 3rd May, 1953, is recognised for D.Obst.R.C.O.G. and M.R.C.O.G.

Applications, stating age, nationality, qualifications with dates, present appointment and experience, and 2 recent testimonials or names of 2 referees, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of ORTHOPÆDIC HOUSE SURGEON (resident) in the Orthopædic and Accident Unit. The service consists of 100 Beds equally divided between traumatic surgery and " cold " orthopædics. Post is recognised for pre-registration service and for F.R.C.S.

Applications, stating age, nationality, qualifications with dates, present appointment, and experience, and 2 recent testimonials or names of 2 referees, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Temporary PATHOLOGICAL REGISTRAR for duties in the Group Laboratory covering the clinical pathology at the General Hospital, Southend, the General Hospital, Rochford, and Westcliff Hospital, for a period of approximately 3 months pending the appointment of a Registrar by the Registrar Grades Appointments Committee. Candidates should have at least 1 years experience in pathology and will be expected to live in or within easy reach of the Hospital. The post is recognised for training for the Diploma in Pathology and excellent facilities for training in all branches of pathology are available.

Applications, with names of 2 referees, should be sent to the undersigned as soon as possible. J. C. FIELD.

Management Committee Offices, General Hospital, Rochford, Essex.

SOUTHAMPTON EYE HOSPITAL. (32 Beds—Recognised for the D.O.M.S.) RESIDENT SENIOR HOUSE OFFICER required from 18th May. Salary £670 p.a.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (280 Beds—Recognised for F.R.C.S.) HOUSE SURGEON (resident) required immediately. Post tenable 6 months.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Post vacant 7th May, 1953. Salary, &c., as nationally advocated. Preference given to candidates intending to specialise in pædiatrics.

Applications, with copies of testimonials, to be submitted not later than 3rd April, 1953, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH-WESTERN REGION. The Board of Governors OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Psychiatry to the South-Western Region. The successful candidate will be based on the Bristol Mental Hospital Group (Barrow and Fishponds Hospitals and the Bristol Neurosis Centre). The appointment, which may be resident or non-resident, will be held for 1 year in the first instance, when the contract will be reviewed and the Registrar may then be posted to a Mental Hospital elsewhere in the Region. It is intended that the post will offer training to enable the holder to obtain the Bristol D.P.M. The successful candidate will, therefore, be required to gain experience in child psychiatry, mental deficiency and neurology, as well as the general and special branches of adult psychiatry, and the work will be arranged accordingly. Should there be sufficient candidates, he will also be able to attend the course for Part I and Part II, D.P.M. at the University of Bristol. The post also offers excellent opportunities for special postgraduate experience in psychiatry and for research work for the preparation of a thesis for higher qualifications. There are well-equipped Departments of Electro-encephalography, Experimental and Applied Psychology, and Biochemical and Endocrinological Research, and an extensive Psychiatric Library at Barrow Hospital.

Applications (12 copies), stating date of birth, qualifications and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board 27, Tyndalls Park-road, Bristol, 8, not later than 13th April, 1953.

SALFORD ROYAL HOSPITAL. (256 Beds.) **Manchester** REGIONAL HOSPITAL BOARD. Applications are invited for the post of RESIDENT SURGICAL OFFICER, vacant 1st May, 1953. The post which is tenable for 2 years is graded Registrar and salary will be subject to a deduction of £155 p.a. for board and lodging.

Applications, together with copies of 3 testimonials, to be sent immediately to the Secretary, Salford Royal Hospital, Salford, 3, Lancs.

SALFORD ROYAL HOSPITAL. Salford Hospital Manage-MENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics). The position, which offers wide experience in all branches of anæsthetics, is recognised for the D.A. Salary subject to a deduction of £155 p.a. for board and lodging.

Applications, with copies of 3 recent testimonials, should be sent immediately to the Hospital Secretary, Salford Royal Hospital, Salford, 3.

SLOUGH. UPTON HOSPITAL. Locum Resident Anæs-THETIC REGISTRAR required immediately.

Apply Hospital Secretary.

SLOUGH. UPTON HOSPITAL. North West Metro-POLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident) required at above Hospital. Post recognised for D.A. Approximately 60% of the duties will be performed at Upton Hospital and 40% shared between other hospitals in the Group. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Kipling Memorial Building, Alma-road, Windsor, by 6th April, 1953.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Obstetric Department consisting of 40 Beds. New Unit to be opened shortly. Post vacant immediately. Candidates should preferably have had previous obstetric experience.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON or SENIOR HOUSE OFFICER to the Orthopædic Department. Post vacant now and is graded according to experience.

Apply immediately, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON to the Gynæcological Department for a period of 6 months from 3rd May, 1953.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER to the E.N.T. Department. The Department has 42 Beds and is recognised for the D.L.O. and F.R.C.S. Post now vacant.

Apply, as soon as possible, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GROUP HOSPITAL MANAGEMENT COM-MITTEE. PLASTIC AND ORAL SURGERY CENTRE, ODSTOCK HOSPITAL, SALISBURY. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical). The post is now vacant and tenable for 1 year. Experience can be gained in the plastic aspects of general surgery, maxillo-facial surgery and burns. Applicants should have held previous house appointments. Salary £670 p.a.

Apply, giving names of 2 referees, to Group Secretary, Odstock Hospital, Salisbury, Wilts.

SHEFFIELD NO. 1 HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in the Medical Department of the City General Hospital and Fir Vale Infirmary. The post provides experience in treatment of acute and chronic medical and psychiatric cases.

Applications, giving full details of age, qualifications, present and previous posts with dates, and the names of 2 persons to whom reference may be made, should be forwarded to the undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary.

SHEFFIELD. REGIONAL BLOOD TRANSFUSION CENTRE, Northfield-road. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time JUNIOR HOSPITAL MEDICAL OFFICER required. Applicants should have had previous clinical experience. The appointment affords scope in all aspects of blood-transfusion work and serology, including research.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 13th April, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP 15 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from general registered practitioners (Male or Female) for the appointment of 2 RESIDENT HOUSE SURGEONS in General Surgery. Vacant immediately and both tenable in the first instance for 6 months. Recognised for the F.R.C.S., and both posts approved for pre-registration service. Salary and conditions of service in accordance with national scale.

Applications, with references, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury. J. P. MALLETT, Group Secretary.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade), vacant 31st March, 1953. Post recognised for the D.A.

Applications, stating age, nationality, qualifications, and previous hospital appointments, together with copies of recent testimonials, should be sent to the Group Secretary, Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury, 13th February, 1953.

SKIPTON (near). THE HOSPITAL, Grassington. (208 Beds.) MIDDLETON AND GRASSINGTON GROUP. Applications are invited for appointment as HOUSE OFFICER at the above Hospital for tuberculosis. Salary in accordance with national scale (based on experience), £350–£670. Accommodation available.

Applications, stating age, qualifications and experience, together with names of 2 referees, to be addressed to the Secretary.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of DEPUTY MEDICAL SUPERINTENDENT of the Inverness Group of hospitals. The post offers good experience in hospital administration and prospects of advancement. Salary £1033–£1200 p.a. Married quarters and catering services are available.

Schedules of application and further particulars of the post and future prospects are obtainable from the undersigned, with whom applications should be lodged by Monday, 20th April, 1953. A. M. FRASER, M.D.,

Secretary and Administrative Medical Officer.

Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from suitably qualified medical practitioners for the post of SENIOR HOUSE OFFICER in Dermatology at Stobhill Hospital, Glasgow. The appointment will be for 1 year in the first instance.

Applications, stating age, qualifications, experience, and present appointment, and giving the names of 3 referees, should be submitted not later than 4th April, 1953, to the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3.

STOCKPORT INFIRMARY, Stockport. (163 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Assistant Resident Surgical Officer). The post will become vacant 17th May, 1953.

Applications, stating age, qualifications, and experience, together with copies of 2 testimonials, to be forwarded to the undersigned, immediately.

H. G. PRICE, Secretary,

Stockport and Buxton Hospital Management Committee.
59B, Shaw Heath, Stockport, Cheshire.

STOCKPORT INFIRMARY, Stockport. (163 Beds.) Applications are invited for the post of HOUSE OFFICER (general surgery and E.N.T.—approved under D.L.O. regulations).

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, or the names of 2 referees, to be forwarded to—

H. G. PRICE, Secretary,

Stockport and Buxton Hospital Management Committee.
59B, Shaw-heath, Stockport, Cheshire, 19th March, 1953.

ST. ALBANS CITY HOSPITAL. (372 Beds.) Mid Herts GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (House Officer grade) required for 1 of the 2 medical teams. Post vacant 29th April and tenable for 6 months. Preference will be given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications, together with the names of 2 referees, should be forwarded to the Acting Group Secretary, St. Albans City Hospital, Normandy-road, St. Albans, Herts.

STAFFORD. STANDON HALL ORTHOPÆDIC HOSPITAL, near ECCLESHALL, STAFFORD. Applications are invited from suitably qualified medical practitioners (Male or Female) for the post of SENIOR HOUSE OFFICER (orthopædics). Salary £670 p.a., less deduction for residential emoluments.

Applications, stating age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to— H. H. JONES, Group Secretary,
Stafford Hospital Management Committee.
13, Foregate-street, Stafford.

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics), vacant 1st May, 1953. Male or Female. Resident or non-resident. Duties mainly at the General Infirmary, Stafford, which is the main and acute general hospital of the Group.

Applications, as soon as possible, to—
H. H. JONES, Group Secretary.
13, Foregate-street, Stafford.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of HOUSE SURGEON. The Hospital is recognised for the F.R.C.S. (Eng.) examinations.

Full particulars of age, qualifications and experience, should be addressed to— O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
Swansea Hospital, St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Surgical Unit of the above, Hospital. The Hospital is recognised for the F.R.C.S. (Eng.) examinations.

Applications, stating age, qualifications and experience, should be forwarded to—
O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
Swansea Hospital, St. Helen's-road, Swansea.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (269 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (Senior House Officer) required for early April.

Applications, naming 2 referees, to Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required for post vacant 19th May; post recognised for the F.R.C.S. Preference will be given to persons seeking a pre-registration House Officer post under the Medical Act 1950. Salary on national scale.

Applications, stating age, experience and qualifications, with dates, together with copies of 2 testimonials, should be sent to the Hospital Secretary by 10th April.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. Locum SENIOR HOUSE OFFICER in Anæsthetics required from 14th April.

Applications, stating age, qualifications and experience, together with copies of testimonials, should be sent immediately to the Hospital Secretary.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (casualty and orthopædic).

Applications, stating age, qualifications with dates, nationality, details of experience, together with 2 recent testimonials, to be sent immediately to the Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton, Somerset.

TAUNTON HOSPITAL MANAGEMENT COMMITTEE. TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of HOUSE SURGEON (general surgery). Post recognised for F.R.C.S.

Applications, stating age, qualifications with dates, and nationality, together with 2 recent testimonials, should be sent immediately to the Secretary, Musgrove Park Hospital, Taunton.

TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. PEMBURY HOSPITAL, PEMBURY, KENT. (624 Beds.) Applications are invited for the immediate appointment of HOUSE SURGEON (resident pre-registration post). Appointment is for 6 months and is recognised for the F.R.C.S. (Eng.). Salary and conditions according to the national scale.

Apply, stating age, qualifications and experience, to the Surgeon-Superintendent.

TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. PEMBURY HOSPITAL, PEMBURY. (624 Beds.) Applications invited for post of RESIDENT ANÆSTHETIST (Senior House Officer). Post vacant now, tenable for 12 months, recognised for D.A. examination.

Apply Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells.

WALSALL GENERAL HOSPITAL, Staffordshire. Applications are invited for the resident post of CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON (Senior House Officer grade), which carries a salary of £670 p.a. The Hospital is the main casualty hospital for the town, and the post, which offers very wide experience, is scheduled under the revised regulations, for recognition for the F.R.C.S. from January of next year.

Apply Secretary.

TRURO. ROYAL CORNWALL INFIRMARY. (212 Beds —8 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the combined pre-registration post of JUNIOR HOUSE PHYSICIAN AND HOUSE SURGEON (E.N.T. and Ophthalmic Departments).

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, to the Hospital Secretary.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a RESIDENT HOUSE OFFICER (Male or Female). **The main duties will be that of House Physician but the appointed person will be required to assist in E.N.T. and other duties. Salary will be £350–£450 p.a., less a deduction of £100 for full residential emoluments.**

Applications should be sent to—
H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, WATFORD, HERTS. (197 Beds.) SENIOR HOUSE OFFICER required for duties in Casualty and Orthopædic Department, at the above modern Hospital situated on the main London Bakerloo line. Salary £670 p.a., less board-residence.

Applications, enclosing copies of 2 recent testimonials, to be sent to CYRIL HOPKINSON, Administrator.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, WATFORD, HERTS. (197 Beds.) HOUSE SURGEON required as from March at the above modern Hospital situated on the main London Bakerloo Line. This is a pre-registration post and preference will be given to candidates desiring such experience. National Health Service salary scale and conditions of service.

Applications, enclosing 2 copies of recent testimonials, should be sent to CYRIL HOPKINSON, Administrator.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Surgery to serve the Mid Glamorgan Hospital Management Committee. The successful candidate will be based at Bridgend General Hospital (400 Beds), and may also be expected to serve other hospitals within the Group. The post may be either resident or non-resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Surgery to serve the Glantawe Hospital Management Committee. The successful candidate will be based at Morriston Hospital, Morriston, near Swansea. The post is resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in E.N.T. Surgery to serve the Caernarvon and Anglesey Hospital Management Committee. The successful candidate will be based on the Caernarvon and Anglesey General Hospital, Bangor. There are ample opportunities for practical work and research. The post is non-resident and subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Orthopædic Surgery to serve the Clwyd and Deeside Hospital Management Committee. The successful candidate will be based at Rhyl. Appointee would also be required to assist in the treatment of "long-stay" orthopædics cases at the Area Sanatoria. The post will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a SENIOR REGISTRAR in General Medicine to serve the Newport and East Monmouthshire Hospital Management Committee. The successful candidate will be based at the Royal Gwent Hospital, Newport, Mon., and may also be expected to serve other hospitals within the Group. The appointment will be for a period of 2 years in the first instance, but subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WORKSOP, NOTTS. VICTORIA HOSPITAL. (127 surgical beds.) Applications invited for post of Pre-registration HOUSE SURGEON or SENIOR HOUSE OFFICER (surgical), vacant 7th April, 1953, duties to include Orthopædic and E.N.T. Departments.

Applications, with copies of 2 recent testimonials or names for reference, to be sent to Secretary, Victoria Hospital, Worksop.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE. GROUP NO. 16 BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (Women's Hospital)

HOUSE OFFICER (gynæcological and obstetric), vacant now. Appointment recognised for M.R.C.O.G.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.
The Royal Hospital, Wolverhampton.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 16, BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)
HOUSE OFFICER (Ear, Throat and Nose Department), vacant now. Salary £450 p.a.
SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.
SENIOR HOUSE OFFICER (anæsthetics), vacant 30th April. Appointment recognised for D.A.

New Cross Hospital, Wolverhampton
HOUSE OFFICER (general surgery), vacant now.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.
The Royal Hospital, Wolverhampton.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment, now vacant, of HOUSE SURGEON (first, second, or third post). The appointment will be for a period of 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WEST BROMWICH AND DISTRICT GENERAL HOSPITAL, Edward-street, WEST BROMWICH. (144 Beds.) WEST BROMWICH AND DISTRICT HOSPITALS MANAGEMENT COMMITTEE GROUP (NO. 18). (BIRMINGHAM REGION.) Applications are invited from qualified ANÆSTHETISTS to carry out 1 session at the above Hospital, for the Consultant E.N.T. Surgeon on Wednesday afternoons. The session will be paid for at the standard rate—i.e., £175 p.a. per weekly session of 3½ hours.

Applications should be sent immediately to J. O. ROBINS, Esq., Group Secretary, at the above address.

WEYMOUTH AND DISTRICT HOSPITAL. (125 Beds.) HOUSE PHYSICIAN required (Male or Female). Post vacant 1st May, and tenable for 6 months.

Applications, stating age, experience, qualifications, and nationality, together with copy testimonials, to Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, immediately.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (Male or Female) required at the above Hospital. House Officer grade post, recognised for the F.R.C.S. examinations. Post vacant May, 1953. Approved pre-registration post.

Applications, stating age, qualifications, &c., together with the names of 2 referees, should be received by the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as soon as possible.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) for duties at the above and other hospitals in the Group. The post, which is tenable for 1 year, will be resident, and is recognised for the D.A. examinations. Wide experience in all branches of anæsthesia is available, and there are particular facilities for experience in major thoracic and orthopædic work.

Applications, stating age, experience, and nationality, together with the names of 2 referees, should be forwarded to the undersigned as soon as possible.

T. W. HURST, Secretary,
Wigan and Leigh Hospital Management Committee.
Knowsley House, Wigan.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. ASTLEY HOSPITAL. (146 Beds.) SENIOR HOUSE PHYSICIAN (resident—Senior House Officer grade) required at the above Hospital which is being developed into a General Hospital with acute medical beds, a Geriatric Unit and infectious disease cases. Facilities will be given for outpatient work at Leigh Infirmary which is nearby. Preference will be given to applicants who have held resident medical posts in general hospitals and the post is suitable for applicants studying for higher qualifications.

Applications, stating full name, age, qualifications, experience, and appointments held, together with the names of 2 referees, should be received by the undersigned as soon as possible.

Knowsley House, Wigan. T. W. HURST, Secretary.

WINLATON, BLAYDON ON TYNE, co. DURHAM. NORMANS RIDING HOSPITAL. (Tuberculosis—76 Beds.) GATESHEAD AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER at the above Hospital. Normans Riding Hospital is modern in every respect and is being developed into a first-class Acute Tuberculosis Sanatorium. Previous experience in the diagnosis and treatment of pulmonary tuberculosis is desirable.

Applications, stating age, experience, and submitting the names of 3 referees, or 3 recent testimonials, should be addressed to H. CLARK, Group Secretary.

"The Lodge," I.D. Hospital, Sheriff Hill,
Gateshead, 9, co. Durham.

WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (non-resident) to Department of Physical Medicine, to work at main hospital(s) and in Peripheral Departments. Work includes all branches of physical medicine and the post is recognised by Examining Board in England for Part II of the D.Phys.Med.

Forms obtainable from Group Secretary, Royal Hampshire County Hospital, Winchester, to be completed and returned within 14 days of appearance of this advertisement.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. 2 HOUSE SURGEONS (general and E.N.T.), vacant immediately. May be pre-registration posts.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. CASUALTY OFFICER (Senior House Officer grade), vacant 1st May. The post is recognised for the F.R.C.S. The appointment will be for 6 months in the first instance, and may be resident or non-resident.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. HOUSE OFFICER (anæsthetics), vacant immediately. The Hospital is recognised for the D.A.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

WORCESTER (near). KNIGHTWICK SANATORIUM. (105 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. The post, which is a resident one, would be suitable for a candidate convalescent from tuberculosis. Single quarters provided. There is ample opportunity for gaining experience in the modern treatment of pulmonary tuberculosis, and minor thoracic surgery is frequently undertaken. Arrangement could be made for chest clinic work if desired. Salary and conditions of service in accordance with National Health Service terms.

Applications, stating age, qualifications and experience, should be sent to the Secretary at Worcester Royal Infirmary.

WORCESTER ROYAL INFIRMARY. Applications are invited for the post of CASUALTY OFFICER. The post is of Senior House Officer status, becomes vacant at the beginning of May and is tenable for 1 year. Conditions are in accordance with the terms and conditions of service for hospital medical staff.

Applications, with copies of 2 testimonials, should be sent to the Secretary, from whom further particulars can be obtained.

WORCESTER ROYAL INFIRMARY. Applications are invited for the post of HOUSE SURGEON (orthopædics) which is now vacant. The appointment is tenable for 6 months and is subject to the terms and conditions of service for hospital medical staff.

Applications, with copies of testimonials, should be sent to the Secretary as soon as possible.

WORCESTER. RONKSWOOD HOSPITAL. Applications are invited for the post of RESIDENT ANÆSTHETIST which is now vacant. The post is of Senior House Officer status. The holder may expect a reasonable proportion of emergency work. Deduction for residential emoluments £130 p.a.

Applications, with copies of 3 testimonials, should be sent to the Medical Superintendent as soon as possible.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks
(*a*) SENIOR ORTHOPÆDIC HOUSE SURGEON, vacant now. Recognised for F.R.C.S.
(*b*) RESIDENT PATHOLOGIST (Senior House Officer), in Area Laboratory, with attendance at Branch Laboratory, Driffield. Post vacant now. Offers experience all branches pathology.
(*c*) HOUSE SURGEON (first, second, or third post), vacant now. Approved pre-registration post. General surgical duties, some orthopædics. Recognised for F.R.C.S.

East Riding General Hospital, Driffield, Yorks
(*d*) HOUSE PHYSICIAN (first, second, or third post), vacant now. Approved pre-registration post. Duties include medical and chronic wards, casualty, and some anæsthetics and midwifery. Good general experience for first House appointment.

Broadgate (Mental) Hospital, Beverley, Yorks
(*e*) HOUSE PHYSICIAN (first, second, or third post), vacant now.

Northfield Sanatorium, Driffield, Yorks
(*f*) HOUSE PHYSICIAN required now at above Sanatorium which has 78 Beds for adults providing general sanatorium treatment. Provision may be made available for thoracic surgery, pathological experience, and M.M.R. Unit. Time for studying.

Salary for (*a*) and (*b*) is £670 p.a. and for (*c*), (*d*), (*e*), and (*f*) is £350–£450 according to previous posts held.

Detailed applications to Secretary, Westwood Hospital, Beverley, Yorks.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

Military Hospital, York (Civilian Wing—60 Beds)
SENIOR HOUSE OFFICER (resident or non-resident), immediately. There are 18 gynæcological beds, 30 general surgical beds, and 12 medical beds. The Hospital is associated with the County Hospital (general hospital of 269 Beds) where relief casualty and emergency work and relief work for House Surgeons may be undertaken and where residence can be provided. Salary £670, less £153 for residence.

City Hospital, York (Modern general hospital of 265 Beds with full consultant staff)
CASUALTY OFFICER AND ORTHOPÆDIC OFFICER (resident or non-resident) as from 1st April. Junior Hospital Medical Officer grade (£700–£50–£1000). Residence available at a charge of £153.

Fairfield Sanatorium (63 Beds)
City Hospital (265 Beds)
SENIOR HOUSE OFFICER in Chest Diseases and General Medicine. Resident or non-resident as from 1st May, to spend half-time at Fairfield Sanatorium (63 Beds), and at the City Hospital where 8 Beds are reserved for investigation of Chest cases, and where outpatient refill clinics are held, the remainder of time at the County and City general hospitals (269 and 265 Beds respectively), in the Department of General Medicine. Previous experience in treatment of tuberculosis an advantage. Salary £670.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, immediately to Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

WORCESTER (near). POWICK MENTAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) at the above Hospital. The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate, is recognised for the D.P.M. and has associated Child Guidance Clinics and a Mental Deficiency Institution similarly recognised. Arrangements are made for Medical Officers to attend at The Birmingham Medical School for instruction in neurology.

Applications, with full details and the names of 2 referees, to be forwarded to the Medical Superintendent.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. WORTHING HOSPITAL, Lyndhurst-road, WORTHING, SUSSEX. (272 Beds—5 Resident Officers.) Applications are invited from registered medical practitioners for post of HOUSE SURGEON for special departments (new appointment). Accommodation available for male or female staff. R practitioners within 3 months of qualification or holding a first post may apply. Salary £350–£450 according to experience, less £100 p.a. for board, lodging, &c. Appointment subject to conditions of service for the National Health Service.

Apply to Hospital Secretary, Worthing Hospital, stating age, qualifications with dates, nationality, and details of experience together with copies of 2 recent testimonials.

A. V. OAKTON, Group Secretary.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for whole-time posts as SENIOR HOUSE OFFICERS and REGISTRARS in hospitals in Northern Ireland for the period 1st October, 1953–30th September, 1954. It is hoped to make appointments in all specialties, and they may be made in any of 3 grades—viz., Senior House Officer, Senior Registrar and Principal Registrar, the analogous grades in Great Britain being Senior House Officer, Registrar and Senior Registrar. Some of the appointments will be made jointly by the Queen's University, Belfast, and the Authority. These appointments will involve teaching and other University duties as Junior, Senior or Principal Tutor.

Applications, stating the Specialty in which the applicant is interested, should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, and which must be returned so as to be received not later than 18th April, 1953.

NEW YORK. ALBANY HOSPITAL, a large general hospital affiliated with Albany Medical College, is offering 2 FELLOWSHIPS in Cardiopulmonary Physiology and Chest Diseases for 12 months beginning 1st July, 1953. All cardiac and pulmonary physiological studies will be done under the guidance of Specialists. Excellent experience. Good pay.

Address inquiries to Medical Director, Albany Hospital, Albany, New York, U.S.A.

NEW YORK. ALBANY HOSPITAL. Approved Internship, ASSISTANT RESIDENCY, and RESIDENCY in E.N.T. available 1st July, 1953, in Albany Hospital, affiliated with Albany Medical College. Salary $1020–$2120. Room, uniforms, and laundry supplied.

Inquire, Medical Director, Albany Hospital, Albany, New York, U.S.A.

NEW YORK. ALBANY HOSPITAL. Approved Assistant RESIDENCY in Neurology available 1st July, 1953, in above Hospital, affiliated with Albany Medical College. Salary $1620, plus room, uniforms and laundry.

Inquire Medical Director, Albany Hospital, Albany, New York, U.S.A.

UNITED STATES. MOUNT AUBURN HOSPITAL, CAMBRIDGE, MASSACHUSETTS. Applications are invited for the positions of approved RESIDENCIES in Anesthesia for a 2-year period beginning 1st April, 1st July, and 1st October, 1953. Salary $1800 first year and $3000 second year, and full maintenance. Training in all branches of anesthesia. There is affiliation with other hospitals. Opportunity to attend various meetings in anesthesiology throughout the New England Area.

Applications, stating age, nationality, qualifications, and experience, together with the names of their referees, should be forwarded to the Director of Anesthesiology, Mount Auburn Hospital, Cambridge, 38, Massachusetts. Travelling expenses to and from the U.S.A. will be paid, but particulars will be sent as soon as application is received. Please enclose recent photograph with application.

U.S.A. BAYLOR UNIVERSITY HOSPITAL, Dallas, TEXAS, U.S.A. Vacancies for RESIDENTS in Pathology in 700-Bed American Hospital in Dallas, Texas. Residency approved for 4 years training by American Board of Pathology. 12,000 surgical accessions yearly, 180 autopsies, affiliated Blood Research Center with special opportunities in hematology.

Write, Director of Laboratories, Baylor University Hospital, Dallas, 4, Texas.

U.S.A. BALTIMORE, MARYLAND. THE UNION MEMORIAL HOSPITAL. ROTATING INTERNSHIPS available, excellent teaching program fully approved by American Medical Association; room, meals, uniforms and laundry furnished plus $50 monthly stipend; also will pay return passage; approved by State Department under Exchange-Visitor Program, No. P-672.

Applications and further information, write to Director, Union Memorial Hospital, Baltimore 18, Md., U.S.A.

U.S.A. HIGHLAND HOSPITAL, Asheville, North Carolina, U.S., AMERICA. Applications are invited for JUNIOR and SENIOR PSYCHIATRISTS. Private, non-profit, psychiatric hospital, owned by Duke University, of Durham, North Carolina.

Applications should be sent to the Medical Director, Highland Hospital.

Public Appointments

ABERDEEN. CORPORATION OF THE CITY OF ABERDEEN. HEALTH AND WELFARE DEPARTMENT. Applications are invited from registered medical practitioners with a post-graduate qualification in public health and appropriate experience for the following posts:—

(*a*) PRINCIPAL ASSISTANT MEDICAL OFFICER. Salary £1100, rising by annual increments of £50 to £1450. The candidate appointed to this post will be required to be responsible for the day-to-day administration of the Mental Health Service, including mental assessment of children, and experience in mental assessment is essential. The person appointed will also be required to undertake other work in the Health and Welfare Department, including possible work in connection with the School Health Service; and

(*b*) SENIOR ASSISTANT MEDICAL OFFICER. Salary £1050, rising by annual increments of £50 to £1400. The person appointed will be required to undertake duties in connection with the health and welfare of elderly persons, cripples, and other handicapped persons, and will also be required to undertake other duties in the department.

The posts are superannuable and the candidates selected for appointment will be required, before appointment, to pass a medical examination.

Application forms may be obtained from the Medical Officer of Health, Willowbank House, Willowbank-road, Aberdeen, with whom these forms should be lodged, together with 1 copy of each of 3 recent testimonials, on or before Saturday, 4th April, 1953.

J. C. RENNIE, Town Clerk.

Town House, Aberdeen, March, 1953.

BUCKS COUNTY COUNCIL. Applications are invited from registered medical practitioners for the undermentioned appointments:—

(*a*) SENIOR MEDICAL OFFICER. Salary on scale £1250–£50–£1650 p.a.

(*b*) ASSISTANT COUNTY MEDICAL OFFICER. Salary on scale £850–£50–£1150 p.a.

Preference will be given to applicants possessing a Diploma in Public Health or, in the case of (*b*) Diploma in Child Health. Travelling and subsistence allowances on the County Council's scale will be paid. The appointments are superannuable and subject to medical examination.

Further particulars and forms of application may be obtained from the County Medical Officer, County Offices, Aylesbury, to whom completed applications must be returned by Saturday, 18th April, 1953. Please state appointment for which particulars are required.

GUY R. CROUCH, Clerk of the Bucks County Council.

County Hall, Aylesbury, March, 1953.

BIRMINGHAM. CITY OF BIRMINGHAM. Applications are invited from registered medical practitioners (Male or Female) for the post of ASSISTANT ADMINISTRATIVE MEDICAL OFFICER OF HEALTH. Candidates should hold the Diploma of Public Health. The successful candidate will have an opportunity to gain experience in all branches of the Public Health Service including maternity and child welfare. The salary scale is £1050 rising by £50 annually to £1250 p.a., commencing salary within that scale depending upon the Medical Officer's experience. Pension scheme (including Widows and Orphans): medical examination. The appointment will become vacant on 15th June. The Officer appointed will be required to devote whole time to official duties and the appointment will be subject to 1 month's notice on either side.

Form obtainable from Medical Officer of Health, Council House, Birmingham, 3. Applications with 3 testimonials to be returned by 15th April.

FACTORY DOCTORS: Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctors are vacant. Apply to Chief Inspector of Factories, 8, St. James's square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
KIRRIEMUIR ..	ANGUS	11TH APRIL, 1953
WEMBLEY	MIDDLESEX ..	18TH APRIL, 1953
WEST HARTLEPOOL ..	DURHAM ..	18TH APRIL, 1953
NORMANBY	YORK	18TH APRIL, 1953

LONDON COUNTY COUNCIL. Visiting Medical Officer. Applications invited from medical practitioners practising locally for appointment as VISITING MEDICAL OFFICER to a new home for old people at Alexandra House, Hampstead (30 residents increasing to 60). Remuneration £30 a year plus fees receivable from Executive Council in respect of residents and residential staff who may be taken on to his National Health Service list.

Full particulars and application form for return by 11th April, obtainable from the Medical Officer of Health (PH/D.1), County Hall, S.E.1 (304).

MINISTRY OF SUPPLY. Applications invited by Ministry of Supply for EXPERIMENTAL OFFICER class vacancies at Research Establishment near Salisbury, Wilts. Candidates should preferably be Biologists but Chemists or Physicists with interest in biological research acceptable. For some posts experience or interest in either vaccine production or biochemical research desirable. Minimum qualification H.S.C. (Science) or equivalent. Additionally a degree in biological science, physics, or chemistry or Diploma of Institute of Medical Laboratory Technology may be an advantage. Salary according to age, qualifications and experience within ranges:—

Experimental Officer (minimum age 26)—£597–£754.

Assistant Experimental Officer—£264 (at age 18)–£555.

Rates for women somewhat less.

Appointments are initially unestablished but there may be opportunities for competing for established posts through competitions held by the Civil Service Commission.

Application forms from M.L.N.S., Technical and Scientific Register (K), Almack House, 26, King-street, S.W.1, quoting "G" 99/53A.

GLOUCESTERSHIRE COUNTY COUNCIL. Applications are invited for the appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male). Salary in accordance with the Whitley Council for the Health Services, Medical Council, £850 p.a., rising by annual increments of £50 to £1150 p.a. The commencing salary within this scale will be determined in accordance with the candidate's previous Local Government experience. Applicants must be registered medical practitioners and the possession of a Diploma or Certificate in Public Health will be an advantage. The appointment will be superannuable and the successful applicant will be required to pass a medical examination. Candidates must be able to drive and be in possession of a car ; travelling and subsistence allowances will be paid in accordance with the Council's scale.

Forms of application with particulars of duties and conditions of appointment, may be obtained from the County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent within 14 days of this advertisement.

GUY H. DAVIS, Clerk of the County Council.
Shire Hall, Gloucester.

HER MAJESTY'S COLONIAL SERVICE. Leprosy SERVICE IN NIGERIA. MEDICAL OFFICER required for the administration of preventive medical services and the clinical work of curative medicine in relation to leprosy. The selected Officer would not deal with leprosy only but would also have the general medical and surgical care of leprosy patients. He would be stationed at a Settlement with properly equipped hospital (with Nursing Sister) and laboratory. The work also includes the supervision of leprosy segregation villages and treatment centres within a radius of 100 miles ; making epidemiological investigations ; and teaching African staff. Clinical research work is encouraged. The Officer will normally have professional colleagues and live in a European community. Appointments may be made as follows :—

(*a*) on 3 years probation for permanent and pensionable employment in the Colonial Medical Service, with retiring age of between 45 and 55. Pensions are at the rate of 1/600th of final pensionable emoluments for each completed month of reckonable service ;

(*b*) from the National Health Service. Candidates may resign from the National Health Service but retain their superannuation rights during their time in Nigeria (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Colonial salary on leaving Nigeria at the end of their engagements ; or

(*c*) on short-term contract with inclusive salary of from £1087 p.a., rising to £2000 p.a. ; on completion of contract a gratuity is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).

Officers appointed under (*a*) or (*c*) are required to contribute to a Widows' and Orphans' Pension Scheme. Salaries for Officers appointed under (*a*) or (*b*) range from £950 to £1850 p.a. Starting salary in all cases depends on experience and war service.

Quarters are provided at low rents. Free passages for Officer and his wife and assisted passages for up to 2 children under the age of 16. An outfit allowance is payable on first appointment. Income-tax at local rates. Normal tour of service is 18 months. Generous home leave. Candidates must hold medical qualifications registrable in the United Kingdom.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference CSE. 60/14/010).

LEEDS. CITY OF LEEDS. Public Health Department. Applications are invited from qualified and registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare. Applicants should have had postgraduate experience, preferably including obstetrics, antenatal work, and paediatrics. The salary is on a scale of £850, rising by increments of £50 to a maximum of £1150. The person appointed will be required to pass a medical examination and to contribute to the Superannuation Fund.

Application forms and particulars of the duties may be obtained from the undersigned at the Public Health Department, 25, East-parade, Leeds, 1, and completed applications should be returned by 10 A.M. on Monday, 6th April, 1953. Canvassing in any form, either directly or indirectly, will be a disqualification.

I. G. DAVIES, Medical Officer of Health.

ROYAL NAVAL MEDICAL SERVICE

Candidates are invited for service as Medical Officers in the Royal Navy—preferably below 28 years.

They must be British subjects whose parents are British subjects, and be medically fit. No examination will be held but an interview will be required.

Initial entry will be for 4 years' short service after which gratuity of £600 (tax free) is payable, but permanent commissions are available for selected short-service officers.

Consideration will be given to the grant of up to 2 years ante-date of seniority in respect of approved periods of service in recognised civil hospitals, etc.

For full details apply MEDICAL DIRECTOR-GENERAL, Admiralty, S.W.1.

ANGLESEY. COUNTY OF ANGLESEY. Applications are invited from Welsh speaking medical practitioners holding the D.P.H. or similar qualification for the appointment of ASSISTANT COUNTY AND SCHOOL MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH for the Borough of Beaumaris, the Urban Districts of Llangefni and Menai Bridge, and the Rural District of Aethwy. Salary in accordance with the national award for a mixed appointment—£1306 5s., rising to £1593 15s. Starting-point according to experience. The national conditions of service, travelling allowance, &c., apply. Assistance will be given with housing.

Application forms, to be returned to the undersigned by 11th April, 1953, may be obtained from the County Medical Officer of Health, Shire Hall, Llangefni.

WILLIAM JONES, Clerk of the County Council.
Shire Hall, Llangefni, Anglesey.

LEICESTER. COUNTY OF LEICESTER. Rural District COUNCILS OF BLABY AND LUTTERWORTH. Applications are invited from registered medical practitioners possessing the Diploma in Public Health or equivalent qualification for the whole-time joint appointment of ASSISTANT COUNTY MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH for the Blaby and Lutterworth Rural District Councils. The salary is in accordance with the awards of the Industrial Court for Public Health Medical Officers holding joint appointments—namely as Assistant County Medical Officer £589 4s. 4d. p.a., rising by 6 annual increments to £797 3s. 6d., and as District Medical Officer of Health £654 10s. 11d. p.a., rising by 4 annual increments to £736 7s. 4d. Consideration may be given to previous experience in fixing the commencing salary. There will be a travelling allowance of £200 p.a. which includes subsistence within the County, and the person appointed will be required to provide his own car and hold a current driving licence. Office accommodation and clerical assistance will be provided by arrangement between the Authorities. The appointment is subject to the terms and conditions of the Whitley Councils for the Health Services (Great Britain) Medical Council Committee "C" ; post pensionable ; the successful candidate will be required to pass a medical examination.

Forms of application and terms of appointment obtainable from County Medical Officer, 17, Friar-lane, Leicester. Applications must be delivered by 18th April, 1953.

NOTTINGHAMSHIRE COUNTY COUNCIL. Kirkby-IN-ASHFIELD URBAN DISTRICT COUNCIL. Joint Medical Officer. Applications are invited from registered medical practitioners for the mixed whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH to the Kirkby-in-Ashfield Urban District. Applicants must have had at least 3 years professional experience since qualifying, be experienced in the duties of Medical Officer of Health, School Medical Officer, and the care of mothers and young children, and possess a Diploma in Public Health. Salaries in accordance with awards of industrial court, i.e. :—

(*a*) Assistant County Medical Officer (36/44ths) : £863 12s. 8d.–£43 3s. 8d. p.a.–£993 3s. 8d. p.a. (On scale £1000–£50–£1150 plus loading in accordance with Spens formula.)

(*b*) Medical Officer of Health (8/44ths) : £300–£9 1s. 10d. p.a.–£336 7s. 4d. p.a. (On scale £1550–£50–£1750 plus 8/44ths of £100.)

Application forms and conditions of appointment are obtainable from my Office and applications should reach me by 18th April, 1953.

K. TWEEDALE MEABY, Clerk of the County Council.
Shire Hall, Nottingham.

SUDAN GOVERNMENT. The Ministry of Health, Sudan Government, invites applications for 2 posts of MALE MEDICAL SPECIALISTS. Candidates should be in the Senior Registrar grade under the National Health Service, and should possess the qualification of M.R.C.P. or should be aged 28–43 and possess the higher qualifications plus considerable experience. Appointment will be on probation for short-term contract (with bonus) up to 6 years. Salary scale ranges from £E2000 to £E3000 (annual increases). Starting-rate of pay is fixed according to age, qualifications, and experience of selected candidates. An outfit allowance of £E50 is payable when the contract is signed. No income-tax is at present payable in the Sudan. Free passage on appointment. Annual leave after the first tour. Candidates for this post may apply for secondment from the National Health Service for period of 3 years under the terms of circular letter N.RHB/(52)106BG(52)101 of 30th September, 1952, in which case the contract with the Ministry of Health, Sudan Government, will be for that period.

Full particulars and application forms may be obtained on application to Dr. E. P. PRATT, 93, Harley-street, London, W.1.

WARWICKSHIRE COUNTY COUNCIL. County Medical OFFICER OF HEALTH'S DEPARTMENT. Applications are invited from registered medical practitioners for the permanent appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male or Female). Preference will be given to those holding D.P.H. or D.C.H. and with previous experience. Salary according to experience within the following scale: £850 p.a. by annual increments of £50 to a maximum of £1150 p.a. The post is superannuable and appointment is subject to the production of a satisfactory medical certificate. The successful candidate will be required to provide and use a motor-car in the performance of his or her duties, for which a mileage allowance is payable.

Further particulars (including details of area) and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 11th April, 1953.

L. EDGAR STEPHENS, Clerk of the Council.
Shire Hall, Warwick, 7th March, 1953.

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General Practice

For an Executive Council post apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

CHIPPING CAMPDEN, GLOUCESTERSHIRE. Applications invited for VACANCY (rural) due to death. List approximately 2000. It is not known whether the residence (which includes surgery accommodation) will be available for purchase. Applications on Forms E.C.16A to reach the undersigned not later than 8th April, 1953.

W. J. T. LITTLE,
Clerk of the Gloucester County and City Executive Council.
12, College-green, Gloucester.

CREWKERNE, SOMERSET. Applications are invited for a VACANCY at 1st June, 1953, arising as a result of the retirement of a practitioner. Surgery and residence not available. List at present approximately 950. Urban/Rural, all prescribing. The successful applicant will be entitled to apply for an Initial Practice Allowance. Applications on Form E.C.16A not later than 10th April, 1953, to the Clerk, Somerset Executive Council, 11, Elmhyrst-road, Weston-super-Mare, Somerset.

LAKENHEATH, SUFFOLK. Applications invited for VACANCY (rural). List at present approximately 2900. Residence and surgery in course of erection will be available for purchase. Temporary accommodation available meanwhile. Apply on Form E.C.16A to the undersigned not later than 10th April, 1953.

PHILIP F. PARK, Clerk, West Suffolk Executive Council.
Crescent House, Angel Hill, Bury St. Edmunds.

Hospital Services : Non-Medical Appointments

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Lincoln NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of basic grade **NON-MEDICAL BIOCHEMIST** in Area Laboratory at the above Hospital. Salary and conditions of service will be in accordance with the recommendations of the Whitley Council.

Applications, giving full particulars, should be forwarded to the undersigned as soon as possible.

R. W. HOWICK Group Secretary.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

Assistant required, aged 25-30, for private practice in West End. H.P. or H.S. experience necessary.—Full particulars to: Address, No. 798, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

National Mass-Radiography Association Ltd. Appointment of Medical Director. Salary: £1900 p.a. Essential qualifications: Candidates must be registered medical practitioners and be in possession of D.M.R., or D.M.R.E. (or equivalent qualification). Desirable qualifications: Organising ability. Considerable experience of interpretation of chest films or of mass-radiography. Duties: To organise and administer a national mass-radiography service in Ireland.—Further particulars and application forms obtainable from the Secretary, above Association, 37/39, Tara-street, Dublin, to whom completed application forms should be forwarded to reach him not later than 11th April, 1953.

British East African Coast. Surgical Assistant with view to partnership required for predominantly European practice in growing seaport. Successful applicant will be required to do General practice in addition to Surgery. 2 partners at present, excellent scope for increase in surgical practice. Salary £1200 p.a., plus accommodation valued at £330 p.a. Low income-tax, good climate. Applicants should state details of qualifications and experience, age, marital status, nationality, &c. Passage paid out.—Address, No. 800, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Secretary/S.R.N., S.C.M., Queen's Nurse; first-class education. Experienced driver; free, now.—Address, No. 799, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Radium for Sale. In needles and cells, &c., of denominations ranging from 1 to 50 mgms. Any reasonable offers considered.—J. C. GILBERT LTD., Columbia House, Aldwych, W.C.2.

Austin A.30 Seven and A.40 Range. A limited number of orders now acceptable from proven essential users for delivery ahead. Brochures from Austin House, 140/144, Golders Green-road, London, N.W.11.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (Telephone: MUSeum 5386-7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

For Sale. Hanovia Duo VII Lamp. Little used. £25 or offer. Purchased 1943.—Address, No. 796, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Required, second-hand microtome and bedding-bath, also small incubator, in good condition, for use in Mission Hospital Laboratory, Nigeria.—Write: Address, No. 797, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

THE ROYAL MEDICAL FOUNDATION

OF EPSOM COLLEGE

Patron	HER MOST GRACIOUS MAJESTY THE QUEEN
President	The Right Hone The Lord Webb-Johnson, K.C.V.O., C.B.E., D.S.O., T.D., F.R.C.S.
Treasurer	Dr. Henry Robinson, D.L., J.P.
Chairman of the Council	Dr. Harold Spitta, M.V.O.
Vice-Chairman of the Council	Sir Ernest Goodhart, Bart.
Secretary	A. Y. Cann, Esq.

We appeal to all members of the Medical Profession, who do not already do so, to subscribe to the above Royal Medical Foundation. In every profession some must fall by the wayside; others must inevitably fall upon evil days.

Our object is to help the families of these less fortunate brethren. To that end the Foundation has provided during the past year:

(A)	47 Ordinary Pensions to Medical Men or their Widows	£1,411	
(B)	45 Foundation Scholarships for Boys (educated, clothed and maintained entirely free of cost)	£11,989	
(C)	15 Scholarships for Girls	£323	
(D)	Education of 25 Boys at reduced fees	£1,398	
(E)	140 Pensions and Annuities of varying amounts	£3,176	
(F)	Grants towards education of 61 Boys and Girls	£2,122	
(G)	Grants to Medical Men, Widows and Spinsters	£415	

This is an expenditure of £20,834 in the year.

In order to maintain this assistance we have to rely upon the generosity of our subscribers for over £16,500 per annum.

Without sufficient help from them even our existing benefactions would have to be curtailed.

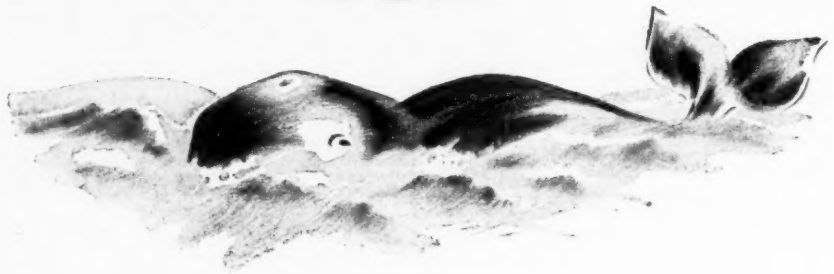
The Sherman Bigg Fund enables the Foundation to make educational grants for those who cannot obtain Scholarships. Donations to augment the income of this Fund will be most welcome.

We therefore beg you earnestly to send either a subscription or a donation to this Foundation during 1953. When doing so you may, if you wish, stipulate the particular form of benefaction on which it is to be expended.

Subscriptions and donations may be sent to any of us, or preferably to the Secretary, The Secretary's Office, Epsom College, Surrey, by whom full information will gladly be sent on request.

HENRY ROBINSON, *Treasurer.*
HAROLD SPITTA, *Chairman.*
ERNEST GOODHART, *Vice-Chairman.*

THE EFFECT OF BULK



When lack of intestinal bulk causes constipation, normal peristalsis may be stimulated by the administration of I-So-Gel.

I-So-Gel, a granular preparation of dried mucilaginous seeds, has the property of reproducing the normal stimulus to intestinal peristalsis by increasing the intestinal bulk, through absorption of water in the alimentary canal.

This natural laxative does not contain purgatives and it has a smooth mechanical action. It is particularly suitable for elderly and convalescent patients and diabetics.

I-So-Gel is valuable also in mucous colitis, dysentery, hæmorrhoids, and intestinal flatulence. After the performance of colostomy, I-So-Gel gives excellent results by solidifying the fæces.

I-SO-GEL

Granules

The gentle bulk laxative

Literature on application

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE: BISHOPSGATE 3201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"